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THE PHARMACOLOGY OF ANIMAL EXTRACTS

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IT would be both valueless and indeed impossible in a paper such as this to consider in detail the pharmacological actions which have been ascribed to all the various animal extracts which have been tested experimentally and clinically. We are, indeed, at once led into the bewildering labyrinth of facts and supposed facts relating to the physiology of the organs of internal secretion. Few, indeed, of the extracts upon the market have any proved pharmacological actions and fewer still have been sufficiently studied to justify their employment in medicine, and I would like to utter a word of protest against the credulity with which physicians listen to the statements of the manufacturers of animal extracts, and supposedly find these statements confirmed by the histories of the cases in which they employ them.

Adrenalin is the only one of these substances which has been isolated in a pure state. It can now be prepared synthetically and has been thoroughly studied. It is a labile substance, and hence when given per os, it has only a local effect in the mouth and stomach, hypodermically its effect save in large doses is small, but if applied intravenously it is marked, though transitory. In every case it exerts its action by stimulating the endings of certain sympathetic nerves. The sympathetic nerves, it will be recollect, leave the spinal cord by the anterior roots in the thoracic and lumbar regions and pass to the ganglionated chord. In one of these ganglia, or in some instances in a more peripheral ganglion, *e.g.* in the coeliac plexus, this fibre ends in contact with a ganglion cell from which fibres pass either to a gland or to an unstriped muscle. It is on these endings in gland or muscle that adrenalin acts.

Opening the Symposium on Animal Extracts, meeting Academy of Medicine, Toronto, January 5th, 1915.

Let us then consider serially its effects when given intravenously. It stimulates the endings in the radial muscle of the iris, dilating the pupil. This will not occur when instilled into the conjunctival sac of man, as its absorption is too slow to overcome the normal tone of the sphincter iridis, unless the sympathetic endings are more than normally susceptible, as for example in many cases of pancreatic diabetes, exophthalmic goitre (Loewi) or succeeding the administration of cocaine (Fröhlich and Loewi), when dilatation occurs more or less promptly. It stimulates weakly the salivary glands and causes prompt fall of tone and inhibition of movement in the stomach and intestines. In some cases it may be used with advantage to produce prompt relaxation of the spasm causing hour glass stomach, and in this, as in other cases of spasm, a hypodermic administration is usually prompt and successful. It has a parallel effect on the bronchial muscles and a hypodermic injection almost invariably succeeds in relieving an attack of asthma (Januschke and Pollack). It accelerates the heart, and increases its out-put per beat (Oliver and Schäffer) and may well be exhibited in cases of acute poisoning by chloroform. It constricts the arterioles; when given intravenously it produces a rise in pressure, which, if marked, causes the lungs and brain to be greatly congested and often the limbs as well. The coronary vessels are dilated by it (Langendorff). It has been frequently employed to prevent bleeding from the gastro-intestinal tract, but this is entirely irrational, as the vessels in the bleeding area will rarely be normal and will in consequence not re-act to adrenalin and hence increased bleeding will result. It has been used intravenously in very dilute solution—100,000 to 1,000,000 in sature to relieve the low blood pressure in infective conditions, *e.g.* peritonitis (Heidenhain) and pneumonia (John) and against surgical shock (Kathe), but is not invariably successful. As adrenalin is readily absorbed by mucous membranes, it comes into contact with underlying arterioles and constricts them, thus lessening bleeding and congestion and decreasing the rate of absorption from the stomach, *e.g.* in cyanide and aconite poisoning (Jona). It will produce a similar local effect if applied subcutaneously or to a wounded surface. The urinary bladder is relaxed and its sphincter increased in tone. The pregnant uterus of all animals contracts mightily and in some few cases its hypodermic administration has been successful in arresting a post partum haemorrhage (Neu). In susceptible persons its administration may produce a hyperglycæmia and the appearance of sugar in the urine. The

temporary and evanescent character of its action must in all cases be borne in mind.

Pituitary extract has only of late years been fully studied. Its active principle has not been isolated. It is much less labile. The extract of the posterior lobe acts apparently upon gland and muscle tissue directly. On the heart it produces slowing with usually some increase in out-put, but its effect on the cardiac blood supply is bad and some authorities consider its entire cardiac action to be deleterious (Tigerstedt and Airila). The action of a second injection in animals often causes a fall in blood pressure. It causes a marked increase in the tone and movements of the intestine and hence is of value subsequent to abdominal operations, though if distension becomes extreme before it is displayed, it rarely has any effect. It also increases the tone and movements of the urinary bladder and again shows its value when employed after laparotomy or post partum (Jaschke). Its most important use is undoubtedly in the second stage of labour when the uterine movements cease or become weak. It then produces increase of movements with relatively little increase of uterine tone, so that a uterine tetanus is exceedingly rarely seen. Owing to its not producing an increase in tone it is of much less value post partum than ergot. In some cases it is successful in producing abortion or bringing on a labour at full term (for literature see Harrison and Watson). In certain animals the injection of pituitary extract causes a flow of urine, but it is by no means clear that this is not secondary to its action on the vascular system. Subcutaneous injection of pituitary extract also produces a marked flow of milk (MacKenzie, Ott and Scott) with a richer fat content, but this primary effect is compensated by a decrease in the milk produced subsequently (Hill and Simpson) and possibly in the fat content also (Hammond). There seems little reason for its employment clinically as a lactagogue though some observers think that they have used it with advantage (Reynolds). The hormone having this lactagogue action is probably distinct from that acting on muscle (Herring).

The connexion between the activity of the pituitary gland and growth as instanced by acromegaly is well known, but this metabolic side of the gland's activity as yet presents no clear cut principles for treatment.

Thyroid extract does not seem to have the direct action on muscle and glands that the two above mentioned extracts possess. Its action is much less well known in detail. Its exhibition stimulates metabolism in an important fashion. Feeding small amounts

of thyroid tends to increase the appetite of white rats and leads to an increased retention of nitrogen and an increase in weight, while larger amounts though increasing the food consumption lead to a decrease in weight and a marked increase in the loss of nitrogen (Hewitt). Based on such facts thyroid has been used successfully in many cases of obesity, but the treatment must be carried out under the strictest chemical control and it is wise to increase the normal nitrogen ration of the patient during the treatment. The treatment not infrequently produces a transitory glycosuria. The use of thyroid in thyroid insufficiency is too well known to need any comment.

In exophthalmic goitre there is a marked increase in the sensitivity of all sympathetic endings for adrenalin and indeed the classical picture of the disease suggests a hyperactivity of this system.

Every breeder of animals is aware of the effect produced by castration either in the male or female and the marked increase in fat deposit that occurs. This change in animals is dependent upon a decreased oxidation (Lowy and Richter) and when it occurs it can be overcome by the administration of ovarian or testicle substance, though such administration has no effect on normal animals. The literature dealing with the effect of the administration of ovarian substance or extract on the monthly cycle of the uterus presents such a wilderness of contradictions that it seems impossible to formulate any proper indications for its employment.

Administration of pineal gland to young animals also leads to an increased rapidity of growth and apparently precocious sexual development (McCord).

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ORGANO-THERAPY IN OBSTETRICAL AND GYNAECOLOGICAL PRACTICE

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THE part assigned me to-night is to initiate the discussion on the therapeutic application of animal extracts in obstetrical and gynaecological practice. In the fifteen minutes at my disposal it is impossible to cover such a large subject, so I shall limit myself to a general survey and leave the details to be filled in by those who follow on in the discussion.

Whilst there has been a great deal of work done in recent years on the relationships between the various ductless glands and the female genital organs, the whole subject is still in a state of confusion, and it must remain so until the inter-action of those various secretions is more fully understood. This knowledge can only come from careful experiment and the co-relation of closely observed clinical phenomena and post mortem findings.

It may be fairly stated that the only animal extract which can be depended upon to produce definite effects on the female genital organs is that derived from the posterior lobe of the pituitary body. The use of one or other of the various pituitary preparations for the strengthening of labour pains has become so general and the literature on it so extensive that I do not intend to say much regarding it now. I shall content myself by giving the conclusions from a paper recently read by me before the Canadian Medical Association.

1. Pituitary extracts have a powerful effect in inducing and in strengthening uterine contractions.
2. The type of contractions induced is similar to that which occur normally, although at first there may be a tendency to prolongation of the pains.
3. Such prolonged contractions result in slowing of the foetal heart, but the child is seldom in danger.

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4. When given in the late part of the first and in the second stage of full time labour the polarity of the uterine contractions is not interfered with, but in early abortions and early in the first stage a simultaneous spasm of the os may occur.

5. Its chief field of usefulness is at the end of the first and in the second stage of labour, when there is delay due to feebleness of the pains, alone or when combined with other complications, such as malpositions of head, malpresentations, multiple pregnancy, slight narrowing of the pelvis, etc.

6. In the induction of abortion, in the treatment of abortion already in progress, and in incomplete abortion, its action is so uncertain that it is not to be recommended except in cases where the os is widely dilated.

7. In the induction of premature labour its effects are uncertain, but if sufficient dosage be given they may be good.

8. In the induction of labour at full term and after, better results are obtained than in premature cases.

9. It gives good results in many cases of post-partum haemorrhage, but is not superior to the various preparations of ergot. It has the power of sensitizing the uterus, so as to allow these preparations to act more powerfully, the combination being most effective.

10. It is a useful adjunct in the treatment of *placenta prævia*, used in conjunction with rupture of the membranes, the use of hydrostatic dilators, or turning.

The results obtained from pituitary extracts are so definite and follow so quickly upon their exhibition that they resemble those obtained from drugs. With the possible exception of thyroid extract no other animal product has such definite therapeutic properties.

Little success has attended the employment of other animal extracts in obstetrical and gynaecological practice. The various extracts employed may be given for one of two purposes.

(a) To stimulate the genital functions when they are in abeyance or sub-normal.

(b) To restrain hyperactivity when there is hyperfunction.

Whilst the ovaries are the organs immediately concerned with the growth and nutrition of the genital organs and with their functional activity, other organs also play a very considerable part. There is a close relationship between all the ductless glands, the secretion of one being antagonistic to that of others or helping out their action. These ductless glands can be grouped according to the effect that their secretion is known or supposed to produce

upon the development, growth, and function of the female genital organs.

THE OVARIES. These are essential for the development, growth, and function of the whole genital apparatus, and also for the secondary sexual characters of the individual. The ovary possesses this property by virtue of internal secretions which it produces. What the exact nature of those secretions is we do not know, nor do we know absolutely where they are produced. There are three possible sources:

1. The follicular apparatus
2. The interstitial cells of the stroma
3. The corpus luteum.

The secretion produced by the interstitial cells or follicular apparatus or both, is probably responsible for the development of the sexual organs between birth and puberty and for the development of the secondary sexual characters, as we know that removal of the ovaries at an early age results in nondevelopment of the genital apparatus and in the production of a neuter type.

The corpus luteum, now regarded as a derivative of the follicular epithelium although by some looked upon as arising from the interstitial cells, is responsible for the maintenance of the cyclical changes resulting in menstruation and probably for the development of the decidua and the nidation of the ovum.

The other ductless glands also exert a varying influence on the genital apparatus either directly or through the ovaries. Thus we know that excessive development of the adrenal produces precocious sexual development, whilst this also results from early atrophy of the thymus gland or destruction of the pineal body. Hyperplasia of the thymus causes arrest of the development of the genital organs. Deficiency of thyroid secretion results in hypo-function as amenorrhœa and sterility. Deficient function of the anterior lobe of the pituitary produces similar results usually accompanied by marked adiposity.

Conversely the ovarian secretion exerts an influence on the other ductless glands. Castration causes hypertrophy of the pineal gland, the anterior lobe of the pituitary and the adrenal cortex, while the thymus may fail to atrophy.

We can thus see that disturbance in any one of the various organs of internal secretions may have pronounced effects on the genital apparatus resulting in disordered function. In the present state of our knowledge it is often extremely difficult to locate the part of the chain where the break is and much of our organo-

therapy is consequently more or less haphazard, and the results very varying. We have only to glance at the literature and note the adversity of opinion regarding the efficacy of the various extracts to realize that we are still groping in the dark in this particular subject.

For our present purpose I think the best we can do is to discuss shortly the conditions which are likely to be benefited through treatment with one or other of the animal extracts. These conditions are infantilism, amenorrhœa, dysmenorrhœa, sterility, repeated abortion, hyperemesis, toxæmia of pregnancy, menopausal symptoms (natural or artificial), pruritus vulvæ, deficient mammary secretion.

Infantilism and general underdevelopment of genital organs with absolute or relative amenorrhœa.

Administration of ovarian or lutein extracts sometimes do good in these conditions but the results are by no means uniform. If underdevelopment is marked we would expect to get the best results from ovarian extract and if development were good from corpus luteum extract. It may be said here that there is a great variety of ovarian preparations on the market. Most of them are made from sows' ovaries, but some from cows'. There must be a very considerable variation in the action of those extracts according to the time at which the animals are killed. The corpus luteum of the pregnant animal is probably of greater therapeutic value than that of the nonpregnant (Dannreuther). It may be given as a dessicated substance or as an extract, by mouth or subcutaneously. The dose should be at least 5 grs. of the dessicated substance thrice daily (Dannreuther). Recently some lipoid substances have been extracted which show considerable toxicity when given intravenously. They cause a marked fall in blood pressure and muscular paralysis. If a genital reaction occurs there is flushing of the external organs and menstruation may be established in a few days. In other cases very prolonged treatment may be required and in some no result at all will be obtained.

In such cases of failure especially if the amenorrhœa is acquired and associated with adiposity it is well to try a pituitary extract—from the anterior lobe and that failing to go on to thyroid. The order may of course be reversed. In many cases no response will be obtained to any of these.

In sterility and abortion not due to local or constitutional causes, some successful results have been obtained by lutein therapy.

Similar good results have followed its administration in cases of the hyperemesis of pregnancy. In such, benefit may be obtained by administration of adrenalin in large doses—10 to 20 m. of 1 in 1000 solution thrice daily. In the toxæmia of pregnancy good results have been reported from the administration of ovarian extracts. Similar results have followed large doses of thyroid extracts—notably in the hands of Nicholson, who believes that many of those cases are due to thyroid inadequacy.

One or two observers have reported good results from ovarian and lutein extracts in cases of pruritus and kraurosis vulvæ. The effect of the extract seems to be the vascularization and slackening up of the tissues affected, with immediate amelioration of the symptoms. In some cases of pruritus at or after the menopause it acts almost like a specific.

In the so-called genito-suprarenal syndrome ovarian extract may relieve to a certain extent.

The symptoms of the menopause either artificial or natural may or may not be relieved by ovarian extract. There are many reports in the literature of good results, and perhaps as many where no improvement was observed.

It must be said of ovarian and lutein extracts in all the foregoing conditions that there is no certainty in their action. Generally if benefit is to follow it will appear in a few days. If it doesn't the dose ought to be increased—there is no danger of toxic symptoms if it is given by mouth. One case is reported where as many as 2500 5 gr. tablets were taken. If, however, the blood pressure falls below 90 mm. it ought to be discontinued.

So far as my own experience goes I have only rarely found any decided benefit from animal extracts in any of the conditions named. Where benefit has followed it has generally been after the administration of thyroid substance in cases of amenorrhœa associated with obesity. In the natural and artificial menopause I have got better results from general tonic treatment than from organo-therapy, although in severe cases I always try the latter.

In the toxæmias of pregnancy I generally rely on other means of treatment, although I have seen good results from large doses of thyroid in threatened eclampsia where the patients showed absence of the normal thyroid hypertrophy of pregnancy. I have also had good results in cases of pernicious vomiting from adrenalin, but other forms of treatment have been used at the same time so that it is impossible to say definitely to which the improvement was due.

Various extracts have been tried from time to time, both experimentally and clinically, to influence the mammary secretion. Schickele found that injections of extract of corpus luteum, ovary, placenta, testicle or pituitary failed to produce any mammary enlargement in either castrated or entire animals. Ott on the other hand demonstrated increased milk secretion after injection of ovarian, placental and foetal extracts. I have used pituitrin as a galactogogue in women who had deficiency of milk with apparently good results.

Ascher has shown experimentally that placental extract causes ovarian hyperaemia and uterine congestion and haemorrhage, and suggests that placental extract might be useful in the treatment of amenorrhœa and sterility.

To sum up the whole matter it may be said that organotherapy as applied to obstetrics and gynaecology is yet in its infancy, and much more knowledge regarding the inter-relationships of the various ductless glands is required before it can be used rationally; that meantime we should observe carefully all cases in which we employ it and note the results, varying if necessary the substance employed. Only by the clinician working in conjunction with the experimental investigator can we hope to gain further knowledge.

ANIMAL EXTRACTS IN SURGERY

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TO the surgeon, the therapeutic value of animal extracts, when compared with other means at his disposal, is indeed small; nevertheless their importance is considerable, and increasing from year to year. Living as we do in an age when investigators in many instances seem to vie with one another to publish their results, it is often difficult for one clearly to see his way. In the following remarks I will endeavour to present some of the more important uses to which animal extracts may be put.

Adrenalin, obtained from the medulla of the suprarenal gland, is the animal extract most commonly used by the surgeon. In combination with cocaine and allied substances, it is in very general use. Barker, of University College Hospital, uses a solution consisting of distilled water $3\frac{1}{2}$ ounces, β -eucaine 3 grains, sodium chloride 12 grains and adrenalin chloride (1-1,000 sol.) 10 minims. Such a solution is non-toxic, so that the tissues can be safely infiltrated with considerable quantities of the fluid. By this means operations of gravity can be performed without pain, including such conditions as strangulated hernia, intestinal obstruction, thyroidectomy for Graves' disease, etc.

The next important use to which adrenalin may be put is in the treatment of shock. Whatever its causation, lowered blood pressure is a constant accompaniment, so that when adrenalin was found to contract blood vessels its employment in shock was a natural consequence. It soon became apparent that unless used intravenously and continuously it was useless owing to the fact that it is very rapidly oxidized and rendered inert. As employed by Lathan and English, a 1-30,000 infusion is passed directly into a vein until the blood pressure rises to about 130 mm. Hg., or if that is not attainable, then till there is a good radial pulse. When this is obtained the solution should then be allowed to run in very slowly about three or four drops per minute. In this way the patient is tided over till reaction sets in. Crile, on the other hand, uses a solution of 1-50,000 to 1-100,000 strength and advises in-

jecting the infusion directly into an artery and towards the heart. In that way he hopes to sidetrack the right heart.

A third use to which adrenalin is frequently put is haemorrhage from deep seated surfaces, a good example being essential haematuria, or ideopathic haematuria. In this condition there is haemorrhage from a kidney which cannot be explained by present knowledge or methods. And if the etiology is obscure, so, too, is the conclusion to be drawn from the published results of cases treated by adrenalin. Molnov gives 20-minim doses every four hours by mouth and claims to obtain results, although it is generally taught that *per oram* the drug is useless. M. Freund recommends stypticin in full doses. Hugh Young recently reported a successful case. There was a return some months later which, however, only lasted a few days. Russell reported a cure after a single injection of 15 c.c. of a 10 per cent. solution. On the other hand, Albaran in 1903 reported a case cured by a cystoscopic examination, and refers to a patient of Picqué and Reblaub who diagnosed that the haemorrhage came from the bladder and did a suprapubic cystotomy only to find that the bleeding came from the kidney. The patient was sent back to bed and an operation on the kidney planned for the next day. The bleeding which had been of long duration ceased spontaneously and no operation was subsequently necessary. Others report the haemorrhage having stopped from passing a ureteral catheter. While Kelly and Burnan admit that in a number of cases where they tried adrenalin it failed, they nevertheless think it should always be given a trial in essential haematuria. In haemorrhage from the bladder more reliance can be placed upon it and it is frequently used to control such bleeding, the solution being injected into the viscus through the urethra. A further use for adrenalin is found when one wishes the operative field as bloodless as possible, the patient at the same time receiving a general anæsthetic. For instance, Mr. Groves when operating upon the posterior nerve roots for the visceral crises of locomotor ataxia infiltrates the part with suprarenal extract as a routine.

Osteomalacia is another surgical condition which has been undoubtedly benefited by the use of adrenalin. The treatment of this condition has been reviewed by Schriell, covering the last fifteen years. There were in his series 37 cases treated by phosphorus, 105 by castration, 36 by adrenalin, 1 by antithyroidin, 16 by pituitrin, 2 by milk from castrated goats, and 6 by x-ray. With but seven recurrences in the series treated by oophorectomy, Schriell claims that this operation still offers the fewest bad results,

being much preferred to treatment by hormones such as adrenalin and pituitrin.

A few years ago Leonard Bidwell of the West London Hospital undertook to investigate the effect of pituitary extract on the bowels after abdominal operations and recorded his findings in the *Clinical Journal* of September 6th, 1911. It was tried in 21 unselected cases the majority (19 cases) receiving three doses of 1 c.c. His conclusions were briefly as follows: The extract is able to overcome the temporary paralysis of the bowel due to exposure as evidenced by the early passage of flatus and the absence of abdominal discomfort. In only three cases, however, did the bowels act without an enema thus in every case except two a satisfactory action of the bowels was obtained after a simple enema. Two cases required an aperient. It was observed too that only two cases required to be catheterized. He advises that pituitrin be given as a routine as follows: one c.c. six hours after the operation, a second dose of similar size twelve hours after operation and a third eighteen hours after the patient leaves the operating room. No further dose is administered unless the patient complains of flatulent distension. The injection should always be made into the muscles since that made into the subcutaneous tissue is very painful. Another important use to which pituitrin may be put is in the prevention of shock. In the *Boston Medical and Surgical Journal* of May, 1913, Hill of Pittsburg records his experiences during the preceding two and a half years, his series embracing some eight hundred abdominal operations. All these patients before leaving the operating table were given 15 minims of pituitrin hypodermically. Then when the patient recovered from the anæsthetic, 15 minims more were injected, followed by three more similar doses at three hour intervals. In addition, all received enteroclysis and were put in the Fowler position with the head of the bed raised fifteen inches. For pain or restlessness physostigmine, gr. $\frac{1}{75}$ + morphia, gr. $\frac{1}{6}$ were given, to be repeated in three hours if necessary. Under such a routine Hill says he has not had in any instance a symptom of shock develop. In two or three cases a condition simulating heart exhaustion was noted, possibly due to overstimulation. It was only transient and the patients responded to stimulants after stopping the pituitrin. After each injection the blood pressure rose. It was during this series that he noted the happy elimination of gas from the alimentary tract, the result of increased peristaltic action.

Eberle uses pituitrin in cases of urinary retention. He thinks

it acts largely through its diuretic action as he has found that adding a little more fluid to a full bladder is often sufficient to originate the necessary reflex. Jaschke reports that there is less need to use the catheter after the injection of pituitrin.

It is obvious, however, that any routine treatment of conditions which may require active surgical interference is not to be desired. Each case should be dealt with on its merits, otherwise there will be not a few instances where pituitrin has been administered in the presence of some mechanical obstruction to the onward passage of the intestinal contents.

According to Prof. Pal of Vienna, who records his experience in the *Medical Record* of July, 1914, pituitary extract is useful in the treatment of exophthalmic goitre. His patient was extremely emaciated and had trembling of the hands and feet. There was marked diarrhoea, insomnia, vomiting, respiratory troubles, a pulsating goitre, von Graefe's sign, etc. Within the course of two months seventy injections of increasing doses of pituitary extract were administered. His weight very soon increased, respiration and sleep improved and the tremor subsided. Although the patient has not been cured, his condition is considerably ameliorated.

In this connexion one might refer to the use made of thymus extract in treating Graves' disease. M. Englander uses it only in those cases where neither medicine nor surgery have had any effect. The case which Englander presented at the Viennese clinic was that of a girl with considerable dilatation of the heart, a systolic murmur and a goitre. Ten weeks' treatment with thymus extract produced a remarkable result. The goitre diminished and the murmur and nervousness disappeared.

Lastly, the following case, from "Progressive Medicine," illustrating the extraordinary use to which some of these extracts may be put, is instructive. A man fifty-four years of age was suffering from chronic rheumatoid arthritis. He was bedridden with all the joints more or less involved. There was extreme wasting, anorexia, sleeplessness with constant pain. He was unable to feed himself, nor could he raise his arms to brush his hair. It was noted that his skin was rough, dry and harsh and that his hair was crisp. His voice was husky and he had a deep suprasternal notch. He was given five grains of thyroid extract three times a day. In a month the result was remarkable. He could struggle on crutches from one room to another, his appetite had returned and the pain was almost gone. In three months he could walk with two sticks and in eighteen months he could walk three miles with one stick.

Thyroid extract is occasionally administered in inoperable malignant disease. On account of its strong catabolic influence it is expected to produce destruction of the growth. In a few instances, at least, it has been attended by a certain amount of improvement.

The relations existing between the various glands of internal secretion are exceedingly intricate and complicated. Yet, one cannot help but feel that when these relationships are finally unravelled, many diseases now considered as largely surgical in character, as, for example, exophthalmic goitre, will be cured by the proper combination of animal extracts.

It was stated by the Minister of Defence of Australia in June that no less than five hundred members, or twenty per cent., of the Australian medical profession were then serving at the front. A good many others have joined the forces since that time. The universities of Sydney, Melbourne and Adelaide have arranged to hold their examinations earlier than usual and the majority of fourth and fifth year students have already made application for military service.

It is estimated that the equipment of the New Zealand hospital ship will cost £25,000. On June 8th, it was stated that £20,000 of this amount had been subscribed and that the work in connexion with the equipment was well advanced.

CAPTAIN R. E. McCONNELL, of Montreal, has been placed in command of the field ambulance detachment clearing hospital and other medical work in the western section of British East Africa.

ANIMAL EXTRACTS IN RHINOLOGY AND LARYNGOLOGY

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THE extract of suprarenal gland has been of great use to specialists in rhinology and laryngology, and chiefly for the purpose of reducing haemorrhage.

I have for years been in the habit of injecting 10 per cent. solution of adrenalin in the tissues over the mastoid just prior to any operation upon that bone, with the result that bleeding has been thereby greatly reduced, and the operation shortened in the time required for its performance.

In operations upon the nose adrenalin is now usually combined with whatever strength of solution of cocaine may be required, as thereby is not only bleeding lessened, but anaesthesia is greatly prolonged, and in addition a much greater strength of cocaine may be used without symptoms of toxicity being produced, because the adrenalin prevents deep absorption.

In the operations of sub-mucous resection of the septum and of the tonsils, I am in the habit of combining 10 per cent. of suprarenal extract with $\frac{1}{4}$ per cent. of novocain solution, and injecting this freely. The result is that an almost bloodless operation is secured, and anaesthesia is prolonged even to an hour. This of course is only used in cases where a general anaesthetic is not essential.

The extract is also used in pure solution in cases of epistaxis to stop the haemorrhage and at the same time isolate the point of erosion. After this cocaine may be applied and a caustic or the cautery used. The combination of cocaine and adrenalin is again extremely useful when we wish to reduce the oedema present about the ostia of the accessory sinuses and the mouth of the eustachian tube, when it is desired to wash out these cavities or inflate the tube.

In the larynx the same remark holds good when we are dealing with œdema, or desire to reduce swelling in order to examine or make applications. I have lately been using hypodermic injections of 5 to 10 minims of the extract, twenty to thirty minutes before passing the bronchoscope or the œsophagoscope, and believe that this measure has been followed by a reduction of the spasm of these tubes.

I have also used similar injections for relief of asthma, but I have not tried the spraying of adrenalin into the bronchial tract through the bronchoscope as recommended by Ephraim in the *Berliner klinische Wochenschrift*.

The extract has also been recommended to define the limits of malignant and lupoid infiltrations, in Quincke's disease when affecting the larynx, and to reduce pain in inoperable malignant disease of the larynx. I have not tried it in any of these.

It has been stated by Sir St. Clair Thompson that a mixture of cocaine and suprarenal extract when combined with a light general anæsthetic helps to reduce shock, but I reported four years ago a case of acute toxæmia attended by acute cardiac dilatation, where a mixture of a 2 per cent. solution of cocaine with an equal amount of full strength adrenalin solution was injected into the tonsils and where there seemed every reason to believe that the cocaine was not at fault. In the same article I referred to a case reported by Hubbard where a patient, a healthy young man under general anæsthesia for a septal operation with every reflex normal, and respiration perfect, was given 15 to 20 minims of adrenalin chloride solution for hæmopytysis, and died.

I have not had any experience with the other animal extracts, but I see that Houssay in the *Wien. klin. Woch.* recommends a combination of pituitrin with suprarenal extract in the proportion of 1 c.c. of the former with 4 to 5 minims of the latter, and states that this mixture may be injected to overcome shock and also that the combination of the drugs intensifies their astringent action, and makes for a very protracted and efficient vaso constriction.

I am initiating some experiments with the use of these latter extracts in otosclerosis, but have nothing at present to report.

ANIMAL EXTRACTS IN OPHTHALMOLOGY

By NEWBOLD JONES, M.D.

WITH the exception of adrenalin the employment of animal extracts in ophthalmology is somewhat limited.

Adrenalin and the related synthetic compounds act upon those elements of the eye which are innervated from the sympathetic system, in the same fashion as very strong stimulation of the sympathetic nerve.

Fractions of a milligramme intravenously cause pronounced mydriasis, which, however, is of short duration, only a few seconds, and may even bring about a momentary increase in the dilatation of a pupil already maximally dilated by atropine. This transient action indicates how momentary is the systemic effect.

When instilled into the conjunctival sac of a normal individual, adrenalin 1 in 1,000 or even 1 in 10,000 powerfully constricts the conjunctival vessels but causes no noticeable mydriasis, likewise none in dogs or cats, but does so in rabbits and particularly in frogs. The susceptibility of a frog's eye to adrenalin is applied as a test for this extract; the iris of a freshly enucleated frog's eye dilates when placed in a solution containing adrenalin. If in the human eye the sympathetic nerve endings of the iris are themselves abnormally excitable, or less inhibited by the antagonistic autonomic mechanism of the oculomotorius than normally, adrenalin causes a sympathetic innervation, also in severe diabetes in man, or in cats and dogs in which the pancreas has been removed. It is possible also that if a patient is under the influence of cocaine, the instillation of adrenalin might dilate the pupil. This reaction of the pupil may consequently have some diagnostic value.

The susceptibility of the entire sympathetic motor mechanism to adrenalin may be enormously increased by the administration of cocaine. Doses of cocaine which by themselves produce no marked influence on the iris of the cat or dog, so act on this organ that instillation of adrenalin causes a marked mydriasis. It might be deducted from this fact that the action of cocaine, which we call

stimulation of the sympathetic nerve endings, is essentially due to a sensitization of the motor sympathetic nerve endings for adrenalin, which is always present in the blood, though in small quantities. Adrenalin is used to a great extent in eye surgery. Its local vasoconstricting action on the conjunctival vessels and also when injected subconjunctivally on the iris and ciliary body, particularly when used in conjunction with cocaine, has reduced the haemorrhage in many operations to a minimum. In cataract extraction, especially where the operator confines his incision to the cornea, the operation in many cases is practically bloodless.

Adrenalin has a most beneficial effect in conjunctivitis associated with much itching—a solution of boric acid and biborate of soda grs. 10 to the ounce with a drachm of adrenalin makes an excellent prescription. The prolonged use, however, of adrenalin in the conjunctival sac is not to be recommended.

With regard to the treatment of eye conditions by thyroid the writer has had no practical experience.

Wagner reported a case of neuroretinitis in myxedema in which vision was much improved by the administration of thyroid.

Radcliffe advocated thyroid extract in the various forms of keratitis, beginning with a small dose, one or two (1 or 2) grains three times daily, and carefully watching the constitutional effect. He believes it of great advantage to use early, even in cases where other drugs are properly indicated. Radcliffe holds that it has a dual action, first on the lymphatic system and second in increasing metabolism and nutrition. It undoubtedly increases the lymphatic action as a marked improvement was seen in his cases within the first four days, such a rapid change would hardly be the result of an improved nutrition alone.

In connexion with this treatment it is interesting to note that Fuchs calls attention to the fact that the same complex of symptoms as occurs in tobacco and alcohol amblyopia is met in chronic poisoning by thyroid.

LITERATURE

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SYPHILIS OF THE HEART AND AORTA

By ALEXANDER MCPHEDRAN, M.D.,

Toronto

OF the advances in modern medicine few are of more importance than those which have been made in our knowledge of the morbid changes and symptoms caused by syphilis of the vascular system. Syphilis has been known as a cause of aneurism for over two centuries, but it is little more than half a century since it was shown to be a cause of arteritis. In 1856 Sir Samuel Wilks first drew attention to syphilitic affection of the heart, and in 1868 Sir Clifford Allbutt gave the first description of the histological changes of syphilitis of the arteries. The knowledge of the subject increased rapidly, but it was not until the discovery of the *Treponema pallidum* as the infecting organism causing the disease that the great importance of vascular syphilis came to be fully realized. It is probably the most common cause of disease of the arteries, and of the heart it is at least only second to rheumatism. Aneurism occurring before middle life is nearly always due to syphilis, and very often after also, if we exclude the later years of life. In many cases no history of infection, or of symptoms due to it can be obtained. It is of great importance to be fully alive to this possibility in all cases, even in those with a history of rheumatism. The Wassermann test may settle the matter. If there is syphilis in other structures, or the existence of disease at least frequently due to syphilis, such as tabes dorsalis, the syphilitic nature of the cardiac or arterial disease may usually be taken for granted.

Syphilis of the heart shows itself as gummata and arteritis, the latter much most frequently. Gummata form chiefly in the wall of the left ventricle and the interventricular septum. Around the gummata and in the tissue supplied by the affected branches of the coronary arteries varying degrees of myocarditis occur; probably the changes are degenerative rather than inflammatory and due to the diminution in the blood supply owing to the sclerosis of the arteries. Fibrosis follows in any case. The aortic valves are

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frequently affected and may show marked thickening, and deformity.

In congenital syphilis, myocarditis appears from recent investigations to be of frequent occurrence. Dr. Alfred Scott Warthin has described a striking series of twenty-two cases. (*Trans. Assoc. Amer. Physicians*, vol. xxv., page 580). In several cases there was sudden death. There may be no signs or symptoms to indicate the heart disease, and no evidences of syphilitic infection may be found elsewhere at autopsy. In young infants there was found diffuse interstitial myocarditis containing many spirochaetes. In some the diseased condition was evident only on careful microscopic examination. In those surviving, other infections of the heart may occur and coronary sclerosis follow later. Various forms of maldevelopment may be associated with the condition. In one case, the oldest, the father, was far advanced in tabes dorsalis.

The aorta in common with the cerebral and coronary arteries is very liable to luetic infection. Its resistance to the infection is low, probably because of the strain of arterial pressure and its rich vascular supply by which it is invaded by many spirochetes. Only in a minority of cases have there been recognized symptoms of syphilis and usually no history of infection, therefore there has been little if any treatment as a rule. Infection of the aorta may occur at any time, even within a few months after the initial lesion, and early prove fatal from rupture of an aneurism. Some writers believe that the infection of the aorta probably occurs in most cases within the first year. This is not to be wondered at, seeing that the organism is borne by the blood stream to which it gains access early after the primary infection.

The infection of the aorta apparently always begins about the terminals of the *vasa vasorum* in the middle coat, and extends thence to the internal and external coats and often to the peri-arterial tissue in which possibly *gummata* always have their origin.

The lesions in the aorta are usually quite characteristic, consisting in the early stage of gelatinous-looking plaques or patches on the inner surface caused by infiltration and thickening of the intima. These may be confined to the immediate neighbourhood of the root; but they may be found also in any part of the aorta and larger vessels. Later they become pale or of a bluish tint and show fibrous-looking depressions of various sizes and shapes, often with linear and irregular contracted scars. On section they are always found associated with disease of the overlying middle and external coats, in which there is infiltration about the *vasa vasorum*, whose

walls, both arterial and venous, show marked sclerosis. In these infiltrated areas giant cells are found; these areas are in fact commencing gummata. The elastic tissue is destroyed quite early and replaced by this gummatous formation. In many cases the spirochaetes are found in these areas. These changes weaken the wall of the artery and constitute the first step in the production of aneurism.

Aortitis occurs also in children who have congenital lues, the anatomical changes resulting being identical with those in the adult (*Amer. Jour. Med. Sci.*, March, 1915, 450).

Symptoms: Syphilitic lesions of the heart and aorta produce symptoms identical with those arising from lesions in the same parts from other causes. The invasion of the auriculo-ventricular bundle by a gumma, or fibrosis secondary to coronary arteritis, is probably the most frequent cause of heart-block. Präcordial distress is common, and so is angina pectoris in cases in which there is sclerosis of the aorta and heart.

These symptoms occurring in early life without a history of rheumatism are indicative of syphilis, especially if the heart is not enlarged and the blood pressure not increased. The Wassermann test may confirm the diagnosis.

Aneurism of the aorta in early life owes its origin in nearly all cases to syphilis; even in later life it is frequently the cause. The aneurism is usually latent in the early stages. Later, pressure symptoms are common, such as pain in the distribution of one or more intercostal nerves, often for a long period and of variable intensity, an increased area of dullness, uniformity of the second heart sound all over the surface of the aneurism which is in contact with the chest wall, first irritation and later paralysis of a vocal cord, etc. The fluoroscope may show the shadow of the mass which may be seen in some cases to pulsate slightly. Even small aneurisms may produce dangerous pressure effects. Such was the case of a young negro girl reported by Winternitz (*Johns Hospital Bulletin*, 1913, vol. xxiv, 212); a small aneurism at the root of the aorta caused sudden closure of a coronary artery proving fatal within twenty-four hours.

Treatment: Next to prophylaxis early, vigorous and persistent treatment is of the greatest importance. Such treatment should cure every case. It is important to keep before our minds that the disease is caused by an infecting organism, the *Treponema* or *spirocheta pallidum*, and that it can be destroyed in the blood and tissues by *mercury*, and by *arsenic* given in the form of *diarsenol*. The treatment should be continued until we are assured the organ-

isms are all destroyed as shown by the Wassermann test. Even after the test gives no reaction the treatment should be continued for several months less vigorously, with gradually lengthening intervals between the courses, and the test applied at intervals to ensure the continued absence of the reaction. At the same time the general health should be maintained in the best possible condition. If such a course were pursued in every case there would be in time no syphilis nor cardio-vascular disease arising from it. The fact should also be emphasized that iodides in any form have no effect on the virus of syphilis; they only affect the exudate arising from it; in this respect they are of great benefit, even in the early stages.

After the later signs of the disease manifest themselves the same course of treatment should be carried out and with the greatest possible efficiency. With the giving of mercury and diarsenol to destroy the spirochæte, and iodide of soda or potash to promote absorption of any exudate that may have formed, the outlook in earlier cases is good, and even in late cases it is not hopeless; there will be improvement in most of the latter and they may be restored to live a comfortable and useful life.

The prophylaxis of the disease does not come within the scope of this paper. It is a matter of the greatest importance to the public health of the country as the number of the infected is increasing rapidly. Many of the immigrants are infected and many of their children show the evidences of the disease. Those people are a grave menace to the communities in which they settle. They constitute a considerable proportion of our hospital population, especially in the larger cities, and are therefore a great burden on our charitable funds. The matter calls for action by the government, as it is quite as important that those infected with syphilis, as with tuberculosis, be excluded from the country.

EXPERIMENTAL GASTRO-ENTEROSTOMY*

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ONE year ago I had the honour of presenting before this section of the Canadian Medical Association the results of some experiments dealing largely with the position of the stoma in a gastro-enterostomy in relation to its mechanical efficiency.

These experiments were carried out by Dr. Archibald and myself in the laboratory of the Department of Experimental Medicine of McGill University.

I take this opportunity of presenting some further studies which have grown out of and which are a continuation of those formerly published (CANADIAN MEDICAL ASSOCIATION JOURNAL for April, 1914). In these we found, as have many others, that if the opening were placed in the cardiac portion of the stomach, proximal to the beginning of active peristalsis, the food passed freely through the pylorus and not by the stoma; that the nearer to the normal outlet the more efficient was the stoma, whether the pylorus was open or closed. We found further, that the closure of the pylorus, when the stoma was placed in the cardiac end, did not materially increase its efficiency. While noting the movements of the stomach in some of these latter cases it was observed that food left the stomach by the artificial opening

* Almost all of the practical work of this continuation of the research was done by F. A. C. Scrimger in the Laboratory of Experimental Medicine, McGill University.

Read by Dr. Scrimger at the 47th Annual Meeting of the Canadian Medical Association, St. John, N.B., July 7th, 1914.

only during that period of peristalsis when the strong contractions of the pyloric end had wholly or almost wholly obliterated its cavity.

It appeared to us that the artificial obliteration of this cavity, namely, all that portion of the stomach distal to the stoma, might be mechanically of material assistance in emptying the stomach through the artificial opening placed in this situation. To test this theory has been the main object of the experiments we have to report at this time.

There are, however, one or two points in respect to gastro-enterostomy in the human to which I would like to call your attention.

Our experiments went to show, and it is commonly conceded, that the nearer to the pylorus the stoma is placed, the greater will be its efficiency; yet in all the cases that I have had an opportunity to examine by the x-rays in following up the late results of the cases operated on in the Royal Victoria Hospital where the opening could be clearly defined, it was seen to have been placed in an almost constant position about a finger's length (or three to four inches) from the pylorus. The reason for this is, that in the no-loop operation, the opening cannot be placed in the immediate vicinity of the pylorus without causing tension or kinking.

Secondly, when examining a patient on whom a gastro-enterostomy has been performed before the fluoroscopic screen, while there is very often a first flow of fluid directly through the new opening, the stomach soon fills beyond the stoma, normal peristalsis begins, and the food passes out at more or less regular intervals, partly through the pylorus and partly through the anastomosis. So long as there is food in the stomach an ulcer is not protected from the normal activities of digestion by a gastro-enterostomy of the pylorus is patent.

Coming more directly to the experiments we have to report, the routine was as follows:

An anterior gastro-jejunostomy was done by the ordinary suture method. The opening in the stomach (three to four cm. long) was placed well towards the fundus wholly proximal or nearly so to the beginning of definite peristalsis. This had been shown in the earlier series of experiments to be an area in which the stoma would not function well whether the pylorus were open or closed. The anastomosis was made with the first loop of the jejunum, using as short a loop as possible.

A fascial ligature was then tied, after the method described by Bogoljuboff (the so-called Wilms method) firmly about the stomach immediately distal to the anastomosis, thus excluding, not the pylorus alone, but the whole peristaltic portion. Stay sutures were then put in half an inch above and below the opening and the abdomen closed.

At varying periods after the animal had recovered from the operation the motor function of the stomach was examined by means of the barium meal before the fluoroscopic screen. This was done through the kindness and with the assistance of Dr. Pirie.

By these means the size, shape and position of the stomach were readily determined. Careful note was made of the rate at which the food passed out, and a watch kept for any evidence of peristalsis, and for any appearance of an hour-glass contraction, which would indicate that food was passing through the constricting band. At a later period the abdomen was opened after the animal had been fed, and the passage of the food from the stomach and the character of the peristalsis were observed. The animal was then killed with chloroform and a post-mortem examination made to determine the state of the stoma and the efficiency of the constricting fascial band. In order to place the anastomosis in a known relation to the beginning of peristalsis, it was necessary to find some means of readily setting up contractions when the animal was under the anesthetic and the stomach empty. This we believe to have found in barium chloride, as it was used by Cannon in his studies of peristalsis of the large bowel and stomach.

We used it in dilutions of 1-20 to 1-1000, painted on the peritoneal surface with a brush, and observed no ill effects either local or general. Barium chloride is, however, an active chemical poison and we have not dared to use or advise its use in the human for this purpose.

In the present series of experiments fourteen animals were used. Of these five died in from three to ten days following the operation, leaving nine in which the experiment was carried to completion. In none of these five could death be attributed to failure of the stoma to act. There was no vomiting during life, nor was any retention of food found at post mortem. Three died during an epidemic of broncho-pneumonia. The post mortem showed this to be the cause of death. Two died from peritonitis, due in one case to the perforation of the stomach by a lead disk put in to mark the site of the anastomosis.

In all fourteen cases the opening was made in the cardiac end of the stomach and a fascial ligature tied tightly around the organ immediately distal to the anastomosis cutting off from the main cavity all of that portion where peristalsis is normally seen.

There are three points brought out in this series of experiments to which I would like to refer. The first is the behaviour of the fascial band used to tie off the stomach at the desired point. It was adopted as a convenient, easy method which added little to the shock of the operation or the time required to carry it out.

In all but three cases out of the thirty-four animals in which it was employed in this and other series it was clinically successful. No food was seen to pass the ligature either under the fluoroscope or with the abdomen open, even when the rest of the stomach was distended with its contents.

In one case the ligature slipped entirely. In two it allowed small quantities of material to pass through into the pyloric portion of the stomach and so on by the pylorus into the duodenum. At the same time I acknowledge that at post mortem when the stomach wall was relaxed it was always possible to pass a probe or even up to a No. 12F catheter through the ligated area. I believe that the fascial ligature should be actually tied and then sutured in place, as was done by the original investigators.

The second point is in regard to the value of solutions of barium chloride to indicate the area of peristaltic contractions while the animal was under an anaesthetic and the stomach empty. This suggestion was taken from Cannon's work on the movements of the intestines, particularly the large bowel.

We used it in dilutions of from 1-1000 to 1-20, painted on the peritoneal surface with a small brush. We have observations of its effect in producing contractions of the stomach in eleven animals.

It was possible in each case to determine the point at which peristalsis began. This was found to be almost constant for the animal employed and corresponded fairly accurately to that point at which peristalsis was seen to begin under the normal stimulus of food before the fluoroscopic screen. With the higher dilutions 1-1000 and 1-500 rings of contraction could always be made to appear at the point of application, that at the cardiac end being shallow and constant; those at or towards the pylorus deeper and showing what Cannon describes as pulsations, a rhythmic tightening and relaxation of the contracting ring. In three cases the 1-1000 solution was sufficient to set up typical rhythmic peristalsis taking origin from a ring situated half an inch to the cardiac side of a point at the junction of the vertical and transverse portions of the stomach. Proximal to this area, that is, on the side of the cardiac portion, a progressive wave of contraction could not be produced even with solutions as strong as 1-20. In one case a solution of 1-500, and in seven one of 1-100 were necessary before this distinction into an area of tonic contraction and an area of peristaltic contraction could be made. It would seem to us that this agent may prove of value in determining the point at which an anastomosis should be made in human cases. We hesitate, however, to suggest its use until more specific tests have been carried out with regard to its

possible toxic action. In none of our animals could death be ascribed to its use, nor was any harmful effect locally on the peritoneum noted.

The third and main point in these experiments is the effect that the placing of the fascial ligature immediately distal to the anastomosis has on its mechanical efficiency.

The opening in the stomach was made in each case just proximal to or at the beginning of the area of peristalsis as shown by the barium chloride. The size of the stoma was from 2.5 to 3 cm. long. Previous experiments had shown that when placed in this position the stoma would not function well whether the pylorus were open or closed. Fourteen animals were used, two dogs and twelve cats. In nine of these only was the experiment carried to completion.

Of the nine animals in which the complete experiment was carried out, all took food well after the first few days after the operation. In two only was it noted that they took less food at a time than previously. All remained in good health and temper; and lived a normal life in the animal house.

Under the fluoroscope with the barium meal the stomach appeared of usual size, moderately well filled. The outline was regular. Peristalsis was recognized in six cases. It was of shallow type and only rarely could the discharge of food through the anastomosis be seen to be synchronous with the wave of contraction. In seven animals all the evidence tended to show that the food was leaving the stomach wholly by the stoma; in two, small quantities were seen to pass through the ligated area into the pyloric portion and on into the duodenum through the pylorus. Even in these the main mass of food went through the stoma. The anastomotic opening was seen at the moment of food passing through in only four cases. In these the shadow ended abruptly just beyond. In others the absence of hour-glass contraction was interpreted as showing that no food was entering the cut-off pyloric portion through the constricting ligature. The stomach emptied in varying times, in one at the end of two hours. Most of the animals showed that a considerable quantity had passed at the end of this time.

It was not easy to fix accurately the times of emptying, nor indeed to fix a normal for the cat. Some food was found in the stomach not infrequently six to eight hours after feeding in normal animals. It seems to depend largely on the quantity and character of the food taken.

The food given was porridge and milk with a small quantity of barium sulphate. The animals were examined from ten days to eight

weeks after operation, and sometimes on two or three separate occasions.

At later periods varying from three to ten weeks after operation the animals were anaesthetized, the abdomen reopened and the passage of the food from the stomach observed. Semisolid food, usually ground-up meat and milk, had been given one hour previously. Here again the barium chloride was of great assistance in that we were able to stimulate at will the muscular activity of the stomach.

An interesting series of observations were made in this connection. We had believed from earlier studies that peristaltic activity was confined to the pyloric region, or that there was a well-defined peristaltic area and an area of tonic contraction distinct from each other, and permanently so. This would seem not to be the case. Peristaltic activity could now be set up in six of the nine cases to the cardiac side of the constricting ligature, in a region where it previously could not be induced. In three of the nine the type of contraction remained as before, a ring of contraction formed, but no progressive wave. The peristalsis in the six cases was, however, of a modified nature. The waves were broad and shallow; they began high up on the cardiac end, in two cases within an inch of the cesophageal opening. They spread not so much like an advancing furrow as in the way of a broadening of the original ring to include more and more of the stomach wall up to the constricting ligature. Sometimes the wave passed over to the cut off pyloric portion, and caused a slight contraction. It could not be considered that this modified peristalsis could do more than raise the general intragastric pressure; at least, the increase of pressure in front of the advancing wave was evidently small. It would appear from these observations that the area of peristaltic activity under abnormal circumstances, such as these, may not be confined to the pyloric end of the stomach. The waves were not so deep nor so powerful as those usually seen in the pyloric region, but were sufficient to indicate that the stomach had adapted itself to some extent to the new conditions, and was tending to form a new antrum in front of the fascial ligature which now offered the resistance normally met with at the pylorus. The same observation has been made by radiographers occasionally in the course of examining patients who presented, after gastro-enterostomy, conditions analogous to those of the animals in this research. The portion of the stomach between the ligature and the pylorus was always found empty, and contracted to the normal size of the empty stomach, even when the rest of the stomach was distended with food. No food was seen to pass through the ligature. The fluid part of the contents escaped

from the stoma at irregular intervals in small quantities. These discharges were frequently associated with the contractions of the stomach already described.

After the passage of food had been watched for one or two hours a post-mortem examination was made to determine the condition of the stoma and the degree of occlusion of the stomach by the fascial ligature.

These observations tend strongly to support the view that an artificial opening made in the cardiac portion of the stomach, the area of tonic contraction, can be made mechanically efficient if the stomach is tied off immediately distal to the opening; while an opening in the same area, if the food is allowed to enter the pyloric region, whether the pylorus is closed or open, will not function well. I do not wish to be understood to mean that we recommend the placing of the anastomosis in the cardiac end of the stomach. On the contrary all our experiments go to show that it should be placed as near the normal opening as is found possible without departing from the principle of the no-loop operation. But we would suggest that in those cases in which it seems wise to occlude the pylorus, the occlusion should be made immediately distal to the anastomosis wherever this has been placed. We believe that this would mean practically a stoma three to four inches from the pylorus, and the tieing off by the fascial ligature of between two and three inches of the pyloric end of the stomach.

A RÉSUMÉ OF THE EVENING CLINIC FOR DIAGNOSIS OF DISEASES OF THE CHEST AT THE BOSTON CITY HOSPITAL

By S. W. ELLSWORTH, M.D.

IT may be difficult for many to realize the brilliant field which the Roentgen ray has opened to the physicians in the study of the internal organs. The possibilities of more accurate determination of the diseases of the chest by means of the Roentgen ray and the assistance such information affords in prognosis and treatment, places a new and greater responsibility upon the internist who is consulted for a definite opinion.

It has been no easy task to convince conservative physicians that the sense of touch, and sound, could be complemented by the more accurate and definite sense of sight into the deeper tissues of the lungs, and that the *x*-ray may disclose conditions in the living body which were recognized hitherto only at the autopsy. New methods of examination must prove their value before they can be accepted. The *x*-ray method is no longer on trial, it is established on a firm basis by years of experience in which medical diagnosis has acknowledged the assistance which it has afforded. Laboratory methods have been justly looked upon with suspicion, if they have tended to supplant, or cause neglect of, old, well-tried, and simple diagnostic methods. It is not proposed that Roentgen ray examinations of the chest alone can or should take the place of auscultation and percussion. The *x*-ray method must, however, be held as a valuable accessory to the routine methods of physical examination; furnishing as it does additional positive or negative findings, it makes possible an earlier and more definite opinion. No medical examination of the chest can now be considered complete which has neglected this assistance.

The greatest medical problem before the physician to-day is the early diagnosis of early pulmonary tuberculosis. A new definition is required for these terms.

Early diagnosis requires that there should be found at once, by the combination of all data obtainable, enough evidence to state positively the existence of tubercular lesions of the lungs, or

to free the patient from doubt and fear, if no signs are found and the lungs are clear; or if suspicious conditions are found, to state the *possibility* of existing disease, classify the patient and give him the benefit of the same treatment which is offered so successfully to the positive case.

Tubercular infection in some form occurs with such frequency that it is now recognized as an almost universal condition. The infection may remain quiescent, or light up into an active process when the individual's power of resistance is lowered.

The manifestations of incipient or early tuberculosis, as ordinarily observed, may be very slight or indefinite. The signs on physical examination oftentimes would suggest early involvement of but one apex. Not infrequently *x-ray* examination shows that the disease has really extended beyond the first stage, and that when one apex is involved, extension to the opposite side is, to some extent, the rule.

Early tuberculosis is that stage preceding the period of cough or expectoration, when constitutional symptoms are indefinite, physical signs suspicious or absent, changes in the lungs demonstrable only by the *x-rays*, before the patient has infected others, and when recovery is probable.

To help solve this problem of early diagnosis of pulmonary tuberculosis, the Evening Clinic for Precautionary *X-ray* Examinations was established at the Boston City Hospital, under the direction of Dr. Francis H. Williams, on November 1st, 1912.

The clinic is for diagnosis only, the patient is examined and sent, with a report, to his attending physician or proper institution for advice and treatment. The clinic is free for those who are unable to pay for such special examination at a private office. Two physicians conduct the examinations, which are made as full as possible and recorded on appropriate charts (a sample chart was shown). A complete history is taken, symptoms noted, physical examination made and compared with the results of fluoroscopic tracing and radiographic interpretation. A summary of all data is combined in the diagnosis, affording ready comparison and review. It is this summary of all evidence which we have called *x-ray* diagnosis.

A trained nurse has been in attendance to prepare women and children for examination, keep the card files, visit patients at their homes to see that they have accepted proper medical care, and to bring in for examination other members suspected or exposed to contact with the tubercular patient; for it is this class of patients in

the earliest stage, who have not yet developed symptoms of sufficient severity to lead them to stop work and to seek medical advice, and who are the most difficult to reach and most essential to search out, if the fight to exterminate the disease is to be successful.

The work is educational, and before it can be accepted by the community, must be recognized as of value to the individual.

A second class of patients, and one which for some time will probably be in the majority, comprises those who are sent in by physicians for confirmation of diagnosis, when disease is suspected or its extent not determined by ordinary methods. Another class is from other charitable institutions, which have not yet been provided with equipment and experience necessary for *x*-ray examinations of the chest.

It is not possible to review in detail the many instructive and interesting cases among the first thousand patients examined by this method, nor to describe the technique and interpretation of fluoroscopic and radiographic findings. The most striking fact, however, is the frequency of mistaken diagnosis made by excellent clinicians, and the large number of delayed or uncertain diagnoses, which have permitted patients to pass from the early to the advanced stages unwarned of the danger which threatened. Aneurism, mediastinal glands and tumours, were overlooked or diagnosis made where none was found by the *x*-ray method. Emphysema has often completely disguised the condition of heart and lungs. Pneumothorax, pleurisy with effusion, encysted pleurisy, and central pneumonia in many cases can be determined definitely only by the aid of the *x*-ray.

During the first fourteen months, 1,036 patients were examined for diagnosis, as follows:

Aneurism.....	11 cases
Cardiac lesions.....	27 "
Bronchial glands.....	46 "
Various diagnoses:	
Asthma, pleurisy, empyema, pneumonia, bone disease	34 "
Pulmonary tuberculosis.....	918 "

In the nine hundred cases which were received with a positive or suspected clinical diagnosis of pulmonary tuberculosis, comparison with the *x*-ray diagnosis was illuminating, as showing the frequency with which not only slight but often extensive and definite lesions are overlooked when auscultation and percussion are alone employed. We note the unreliability of percussion and auscultation in defining the location, the extent and the nature of the lesion,

ANALYSIS OF THE DIAGNOSIS IN 918 CASES EXAMINED WITH REFERENCE TO PULMONARY TUBERCULOSIS

CLINICAL DIAGNOSIS		X-RAY DIAGNOSIS	
Positive.....	253	Positive.....	187
		Negative.....	14
		Suspected.....	52
			— 253
Negative.....	45	Positive.....	15
		Negative.....	24
		Suspected.....	5
		No diagnosis.....	1
			— 45
Suspected.....	620	Positive.....	351
		Negative.....	83
		Suspected.....	148
		No diagnosis.....	18
		Deferred.....	20
			— 620

and the impossibility of giving a negative diagnosis when the lungs are clear, unless the *x*-ray method is used.

The comparison of the heart outlines on the fluoroscopic tracing and on the radiograph, with the right and left borders, as obtained by percussion, in this series of cases is most convincing of the inaccuracy of the latter method when dealing with a patient with thick chest walls, either a large or a small heart, abnormal bony thorax, emphysema and pleurisy; while, on the other hand, given the normal chest and heart, percussion outlines very frequently coincide with the *x*-ray borders. Percussion accuracy is noticeably improved when methodically checked by *x*-ray examination.

It cannot be claimed that the *x*-ray will clear up any and all doubtful cases, but the percentage of positive diagnoses can be increased by the employment of this method.

CONCLUSIONS. 1. Roentgen ray examination as an accessory to older methods enables one to make an earlier diagnosis in many doubtful cases of disease of the chest with an accuracy not obtained heretofore.

2. No examination of the chest is complete without the *x*-ray record of screen and plate.

3. The best results are obtained when the complete examination is made by the clinician.

4. Clinicians can and should equip themselves to employ this method.

Case Reports

SERIES OF UNUSUAL SURGICAL CONDITIONS

By DR. A. T. BAZIN

CASE 1. Hour-glass stomach, due to traction of an umbilical hernia. About a year ago I presented to the Society two cases of hour-glass stomach, the one cicatricial, the other spasmodic, due to saddle ulcer over the lesser curvature. The present case demonstrates a third variety.

Mrs. D., aged sixty-five, was admitted to the General Hospital, February 12th, 1915, referred by Dr. N. M. Cooper of Ormstown and giving the following history: Throughout her lifetime she enjoyed exceptional health, but for thirty years has had an umbilical hernia, which has gradually increased in size and for which she could find no comfortable support. Always a hearty eater, no indigestion.

The present illness began in April, 1914, at which time she weighed 307 pounds. Without apparent cause the patient would vomit, usually in the late afternoon or evening, and would feel normal and hungry in the morning. No pain, discomfort or nausea until just before vomiting set in. Attacks recurred about every fortnight, but became increasingly frequent to three or four times per week. She learned to use the stomach tube and had daily lavage; dieted on milk and eggs, etc., and became markedly constipated. Lost flesh rapidly till on admission she weighed 187 pounds, a loss of 120 pounds. In the preceding weeks had also lost strength but continued to do her housework.

On admission: The skin is loose, dry and wrinkled; the abdomen lax and sunken; umbilical hernia present, base four inches in diameter, and projecting about five inches, tympanitic, contents adherent to sac and cannot be reduced. Bowels had not moved for over a week and scybalous masses fill the descending colon.

Myocarditis present. The urine is normal except for presence of large quantities of acetone; in the stools, no occult blood. Blood: erythrocytes 4,700,000, leucocytes 7,600, haemoglobin 70 per cent.

Read before the Montreal Medico-Chirurgical Society, June 4th, 1915.

Stomach contents: No marked retention (test meal given in the forenoon and patient in bed); free HCl., 65; total acidity, 100; no lactic acid; occult blood positive; a few yeast cells present. Skogram: Barium sulphate meal shows a definite hour-glass due to traction of greater curvature into neck of hernial sac.

Operation February 19th: Transverse elliptical incision and radical cure of hernia by Mayo's method of reduplication of rectus sheaths. Contents were omentum and large loop of transverse colon all bound together and to the sac by strong bands of adhesions. The greater curvature of the stomach was pulled down to the level of the hernial ring and at this point the gastro-colic omentum showed an area of fibrosis caused by friction against the ring.

Freeing of the adhesions and returning the colon restored the stomach to normal shape. In spite of the tremendous loss of weight the transverse meso-colon was from two to three inches thick with firm fat between its layers through which the duodenal-jejunal flexure was tunnelled.

I will not detail the convalescence; it was an extremely stormy one. Vomiting was a marked feature from the first and due to two causes, namely, acetonæmia, which was combated by daily subcutaneous soda bicarbonate solution, 3 per cent., in large quantities, and dilatation of the stomach due to, I think, obstruction at the duodenal-jejunal junction. When one considers the thickness of firm fat in the transverse meso-colon and that for nearly thirty years this structure had been standing out almost at right angles from its attachment to the posterior abdominal wall and entering the hernia, it is easy to conceive that the sudden alteration in its direction would so squeeze the duodeno-jejunal junction passing through it as to cause obstruction. This cause of vomiting was in turn met by posturing the patient in an inverted position, by stomach lavage and liquid paraffin introduced through the stomach tube. At no time did the bowels give trouble, responding freely to enemata of various kinds. Syncopal attacks were alarming from time to time and on the ninth day a hypostatic pneumonia developed on the left side.

She was discharged March 13th, twenty-two days after operation, being conveyed to her home in the country by ambulance and stretcher. The condition on discharge showed the wound healed and firm. The suture line was fourteen inches long, closed by tension sutures, which were removed on the seventh day and Michel clips removed on the fifth day. She was taking nourishment freely and without discomfort; the urine was normal except for some albumin and pus cells due to cystitis, consequent upon cathe-

terization having been required. Pulse 80, but dyspnoea and orthopnoea on slightest exertion and heart somewhat enlarged.

At the latest report, May 17th, she is able to move about the house and take short walks.

CASE 2. Pre-natal volvulus of small intestine.

On October 5th, 1909, a robust female child was born at 8 a.m. after a natural, easy labour on the part of the mother, this being her ninth child. During the first twenty-four hours the child cried lustily and frequently as if in pain; urinated freely but passed no meconium and vomited a greenish fluid several times. In the forenoon of the day following birth, examination showed an evenly distended abdomen with no mass palpable; anal orifice normal and finger passed into anal canal $1\frac{3}{4}$ inches found a capacious bowel cavity the top of which could not be reached; the finger was not stained with meconium. In the afternoon enema given with soft rubber catheter which could be passed four or five inches; enema expelled after three or four ounces had been given. No stool, no flatus, but a large quantity of inspissated opaque white mucus.

On October 6th, operation at 8 p.m., thirty-six hours after birth, chloroform anaesthesia. Anal canal: finger passed into capacious gut which at level of pelvic brim suddenly narrowed to admit only the tip of the little finger. Gut was empty, no meconium stain; no bulging colon to be felt above. Abdominal incision: through left rectus below level of umbilicus. On opening peritoneum a quantity of blood-stained serum escaped and the small bowel presented, this was purplish in colour and distended to $1\frac{1}{2}$ inches in diameter. Neither sigmoid nor cæcum could be palpated. A loop of the distended small bowel was secured and the fingers passed to the mesenteric root which was found to be twisted upon itself. Rapid evisceration was done, which demonstrated that from three to four feet of ileum and jejunum were involved in a volvulus of $1\frac{1}{2}$ turns from left to right. There were no adhesions and the malposition was easily corrected, hot towels being applied to the gut. With the abdomen thus emptied it was seen that the upper part of the small intestine was normal in size, though dark and congested and filled with fluid and gaseous contents. The distended portion of the small gut also contained gas and fluid but towards the lower end the contents became more and more firm and about four inches from the ileo-cæcal valve became scybalous in character. The cæcum and all of the colon were represented by a firm contracted cord about 7 mm. in diameter filled with hard nodules giving it the feeling and appearance of a string of beads.

As no relief was evident an enterostomy was done in a loop of ileum about five inches from the cæcum and a small Paul's tube inserted. The flow of meconium had to be assisted by passing a small catheter along the tube into the gut and washing out with saline. In this way the small intestine was emptied; it regained normal colour and size and it was then possible to return it to the abdominal cavity, the Paul tube being brought out of the original incision, which was closed with through and through silk-worm gut sutures.

On the following day the tube discharged freely; there was only occasional vomiting; water taken by mouth. In the early morning of the 8th and throughout the day the bowels moved naturally per anum; frequent vomiting during the forenoon and early afternoon; some distension of the epigastrium, which lessened towards evening, and vomiting ceased. The child slept most of the time but would not nurse; water with whiskey given. On the 9th stomach distended; lavage followed by improvement. 10th, Paul's tube came away, suture having cut through; stools are lighter in colour; nursing vigorously, no vomiting. On the 11th, no stool per anum, profuse discharge from fistula, sutures cut through and wound gapes; no vomiting, nursing well. 12th, profuse watery discharges from fistula with much partially digested milk. In the evening a severe haemorrhage from the base of the umbilical cord and the child died, six days after operation, seven and a half days after birth; no autopsy allowed.

Observations and deductions: Usually intestinal obstruction in the new-born results from some form of imperforate anus or mal-development of the hind gut. The present case adds to the etiological factors of that condition. The thinned out intestinal wall, as also the abdominal wall, weakened by the distension and macerated by the discharges, led to the early cutting out of the sutures. If I had not acted on the supposition that the inspissated nodules of mucus in the colon would have proved an unsurmountable obstacle to peristalsis and had omitted the use of Paul's tube, contenting myself with a simple enterotomy to empty the intestine followed by suture of intestine and complete closure of the abdominal wall, the outcome might have been different.

CASE 3. Double inguinal hernia in a marantic infant.

Baby M., male, aged five and one-half months, referred by Dr. W. M. Fisk, August 22nd, 1913. The child was a seven-months' baby, labour having been induced on account of the suffering and ill health of the mother who had had a ventro-suspension eighteen

months before. Weight at birth four pounds. Bottle fed from the start and gained but slowly with considerable digestive disturbance. One month prior to operation these symptoms increased, vomiting occurred after almost every feeding and crying from colic was incessant; the child was rapidly failing. At birth the right inguinal region was prominent but not until the baby was three and a half months old did definite hernia manifest itself, first on the left, later on the right side; a rubber truss was applied which failed to hold the herniæ.

Examination showed both testicles in normal position. The left hernia was reducible; the right reducible except for a narrow elongated mass which remained in the sac and which was tender to pressure, leading to a diagnosis of appendix adherent in the sac.

Operation confirmed these findings, the contents of the left sac being sigmoid and of the right sac the cæcum and appendix; the tip of the appendix was bulbous and firmly adherent to the bottom of the sac.

Recovery from operation was uneventful and there was immediate improvement in the digestive ailment, vomiting was only occasional, colic infrequent and there was steady gain in weight. Unfortunately when one year old the child developed bronchopneumonia which caused its death.

A word as to an important detail in the post-operative treatment of similarly-placed wounds in infants. I apply no dressings and do not allow a diaper to be used. The incision, which is closed with Michel clips, is painted with Tr. Iodine daily until the clips are removed on the fourth day. In this way the wound remains dry and healing is prompt.

Editorial

GASTRIC ULCER AND GASTRIC CANCER

SINCE 1835, when Cruvielhier suggested that possibly there was a relationship of cause and effect, or that of a primary or secondary process between gastric ulcer and cancer, the interest in the subject has been increasing. To-day the view is repeatedly expressed that gastric cancer is often engrafted on an ulcer and a malignant transformation occurs not infrequently on the cicatrix of a healing ulcer.

Notwithstanding the lapse of time which marks the distance between the suggestion and the stout affirmation of a relationship of these common processes in the stomach, during which an increasing number of observers have taken up the question, it is certain that opinions are yet divided and the last word on this important matter has not yet been spoken. More and more, as surgery is able to accomplish with increasing safety so much for the relief of cancer patients, it becomes almost obligatory to operate on patients in whom for well founded reasons a "precancerous" state is discovered. If one may believe that gastric cancer follows gastric ulcer in from 66 to 71 per cent. of instances, as some affirm, and if an early excision of an ulcer or an operation promoting healing, lessens the predisposition to cancer, then the indication for operative interference is clear in all cases of gastric ulcer, as soon as diagnosed, and exploration even in suspected cases.

The arguments that have been advanced for the support of the view of a close relationship are numerous. The theory of chronic irritation as a cause of cancer for which so many illustrations are to hand, e.g., smoker's cancer, Australian cancer, etc., is frequently quoted. It is difficult to see, how-

ever, just how this theory can be applied to explain how a cancer follows upon an ulcer. There are but few, we believe, who deny that these processes may have a common cause—an irritating cause. Moreover, the site most common to ulcer is not that most common to cancer, according to Head. Again the histologist points out in many cases that the ulcer is undergoing a cancerous transformation. In the mucosa and submucosa, at the edge of the ulcer, cancer cells are found or a cicatrix of a former ulcer is showing cancerous changes. Perhaps from this source the high percentages arise and before long possibly the most skeptical will be convinced through this observation alone.

Statistics as usual give a varied answer according to the atmosphere, clinical or otherwise, in which they are studied. It is a statement of fact which Hemmeter wrote not long since that physicians are skeptical of the high percentage indicating the relation of these two digestive diseases, as viewed by American and English surgeons; and while admitting that cancer follows ulcer, it does so in a small proportion of cases, varying from three to seven or ten per cent.

Hirschfeld in 1902 comparing the number of ulcer patients (3 per cent.) in the hospitals of Zurich, Munich, and Vienna with those in Berlin, and Hamburg (7 per cent.), showed that where ulcer cases were in excess, cancer cases were not found with corresponding frequency. Friedenwald has reported upon one thousand cases of gastric cancer, only seventy-three of which gave a definite history of former gastric ulcer, while two hundred and thirty-two (23 per cent.) recalled some previous gastric disturbance. Thus 7·3 per cent. were cases of gastric ulcer, and if we regard all those as ulcer patients who had previous gastric disturbance, the percentage falls far below that quoted above.

Billeter, quoted by Hemmeter, observing the surgical cases in Professor Krönlein's clinic, carefully regarded one hundred and sixteen cases that were operated on for ulcer of the stomach. No excisions were done—simply gastro-enteros-

tomies. The patients were observed from four years to twenty-six years. Nineteen patients died, and eighty-seven were still living without any sign of carcinoma. Two patients died of cancer but only one was of secondary cancer. There was a suspicion of cancer in ten at the time of operation. These made a complete recovery. From this group, small indeed, it is seen that less than one per cent. developed cancer—secondary to ulcer.

Hemmeter remarks, "one is not in duty bound to establish as a therapeutic principle the resection of gastric ulcer on account of any subsequent danger from carcinoma." He adds that of two hundred and thirty-two cases of gastric ulcer observed by himself in twenty-five years, but three developed cancer.

As pointed out in the beginning of this note, the last word has not been spoken in this matter. It can come only after more years of close observation and comparison.

A QUESTION OF PRIORITY

IN the *Journal of Obstetrics and Gynaecology of the British Empire* for January, 1915, one finds a "Note on the 'Dublin method' of conducting the third stage of labour," contributed by Dr. T. Percy C. Kirkpatrick. It seems that recently there had come into the hands of the author a fairly well-known pamphlet, new evidently to him, which was issued by John Harvie, a teacher of Midwifery of London, under the title "Practical Directions, showing a method of preserving the perineum in birth, and of delivering the placenta without violence; illustrated by cases."

Dr. Kirkpatrick recalled the fact that another Irishman, Dr. Henry Jewett, had, in May, 1900, before the Obstetric Section of the Royal Academy of Medicine in Ireland, claimed that the method of effecting the delivery of the placenta by external manipulations as opposed to its delivery by traction on the fundus, was originated in Dublin. Dr. Jewett stated

that as there was no essential difference between the "Dublin method" and the method first described by Crede in 1853, subsequently known by his name; that therefore the method of expulsion of the placenta by pressure applied to the fundus uteri should be termed the "Dublin method."

The literature on this subject, which was available in 1904 to Prof. A. O. Lindfors of Upsala, was also within reach of Dr. Jewett if he had consulted it before putting forth his claim. In the *Handbuch der Geburtshilfe* of F. von Winckel, Bd. i, Teil ii., Professor Lindfors in a masterly and interesting historical review of the records of our knowledge of the management of the third stage of labour, gives full credit to John Harvie and extensively quotes the latter in English. Professor Lindfors shews that not only was John Harvie the first to recommend careful systematic palpation of the fundus uteri through the abdominal wall during the third stage of labour, but that he also was the first to recognise and record that the shape of the uterus altered with the detachment of the placenta and that he established the fact that external pressure then applied to the fundus was sufficient to bring about the expulsion of the placenta.

Professor Lindfors mentioned that Dease, an Irishman, at the time Master of the Rotunda, in 1783 described a method which was practically the same as that of John Harvie, but doubts whether he had been unaffected by the teaching of the latter.

One may well ask, why qualify or designate the method by the name of a man or of a city? We speak of manual removal of the placenta, why not designate the method under discussion, "the manual expression of the placenta"?

A PORTION of the £50,000 which was transmitted to the British Government by the women of Canada some months ago is now being expended upon an addition to the Royal Naval Hospital at Haslar in the Isle of Wight. The new wing will provide accommodation for 250 beds. It will be built

of red brick with stone facings, and will be separate from the main building. The extra accommodation is badly needed, particularly in view of the naval operations in the Dardanelles.

ON page 1087 of the *British Medical Journal* for June 26th, an appeal is made by the National Medical Research Committee, for information concerning the results obtained by practitioners who have used the salvarsan products manufactured in England and France. The committee repeats its former statement that it is satisfied that the biological tests applied under its direction proved that the products were not inferior, in safety or in efficacy, to the original German preparations.

THE annual meeting of the Medical Library Association took place recently, under the presidency of Lieutenant-Colonel C. C. McCulloch, of the Surgeon-General's office, Washington. The Association has been in existence for eighteen years; the membership is open to any medical society, association, university or college, with a library of at least five hundred volumes and a librarian or other attendant in charge, and to any individual interested in medical literature in libraries. The fee is \$10 library membership and \$5 individual membership. At present there are fifty-two library members and 46 individual members. The Secretary-treasurer of the Association is Dr. John Ruhräh, 1211 Cathedral Street, Baltimore, Maryland.

THE sum of £145,000 is included in the Civil Service estimates to cover grants which the British government proposes to make to universities, colleges, and similar institutions which are in receipt of parliamentary grants and which have been adversely affected by the war by the loss of fee income arising from the widespread response among men students to the call for recruits.

AN interesting account of hospitals and medical education in China is found in the Report of the China Medical Commission, appointed by the Rockefeller Foundation, New York, a summary of which appeared in the June number of the *Bulletin of the Johns Hopkins Hospital*. The death rate in China is extremely high, as may well be imagined. Tuberculosis, hookworm disease, syphilis, leprosy and smallpox are among the diseases most frequently met with, and "patent" medicines enjoy an unrestricted vogue. Chinese doctors know nothing of anatomy or surgery, and it was only on November 22nd, 1913, that dissections and *post mortem* examinations were officially authorized. The Chinese physicians who have been trained in the Western Schools, usually are attached to mission hospitals. The Chinese schools are poorly equipped and inadequately staffed and the Commission found that a study of the hospitals virtually amounted to a consideration of the mission hospital, as other hospitals established by foreigners are intended for the care of such foreigners and have little direct influence on China itself.

THE following resolutions were passed at a meeting of the Union of Municipalities Convention, which took place at Humboldt, Saskatchewan, on June 24th. That the government be asked to increase the grants paid to hospitals for treatment of infectious cases. That in view of the necessity of hospital accommodation being provided to all persons and the difficulty of obtaining collections and the constant trouble to run hospitals partly maintained by charitable contributions, it is desirable that the Provincial Government should authorise a co-operative system of hospital accommodation by the union of urban and rural municipalities for the erection and entire maintenance of hospitals for all patients in their districts, and with this view that a capital fund be divided between the several municipalities according to their size or rateable value. That the entire cost of maintenance be met by the payment of all patients' bills of persons residing within

the respective municipalities by the respective municipalities. It has been found that the cost of maintenance rarely exceeds \$1.00 per quarter-section and often less, and this provides accommodation for the farmer, his family and hired help.

THE eighth annual report of the British Columbia Anti-tuberculosis Society states that, during 1914, 180 patients received treatment at the King Edward Sanatorium at Tranquille. During the year in question, 91 patients were admitted to the sanatorium; these latter were classified on admission as, incipient, 14.3 per cent., moderately advanced, 28.6 per cent.; far advanced, 54.9 per cent., and non-tubercular, 2.2 per cent. The percentage discharged with the disease arrested or quiescent was, incipient, 71.4, moderately advanced, 54.5, advanced, 21.5. The percentage of those discharged improved was 23.7, and 34.2 per cent. died. Five patients, who on admission were suffering from acute tuberculosis, died within seven weeks. The treatment given consisted of rest in the fresh air, good food, and carefully graded exercise. Artificial pneumothorax was tried in fourteen selected cases, in eight of which a good pneumothorax was produced; in four cases the procedure was partially successful but the patients derived no benefit as but little compression of lung could be effected on account of adhesions. One case refused to continue the treatment and in another it was impossible to find pleural space because of adhesions. In three cases complications developed. Autogenous vaccines were tried in a few cases, and tuberculin was administered in other selected cases. The conclusion drawn from the results of these modes of treatment is that "while tuberculin, vaccines, and pneumothorax are valuable aids in suitable cases, the mainstay of the treatment must be rest in the fresh air, and when active signs of the disease have subsided, carefully graded exercise." Unfortunately, during the year it has been necessary to refuse admission to many applicants owing to lack of accommodation.

THE hospital commission, recently appointed by Order-in-Council, held its first meeting July 20th at the militia headquarters. The president, the Honourable Senator Lougheed, presided, and the following members of the commission attended: Colonel Sir H. M. Pellatt, Toronto; Mr. Smeaton White, Montreal; Mr. John S. McLennan, Sydney; Lieutenant-Colonel Thomas Walker, St. John, New Brunswick; Mr. F. W. Avery, Ottawa; Mr. C. B. Smith, Montreal, and the acting director-general of medical services, Major Potter. The deputy-minister of Militia, Surgeon-General Fiset, Lieutenant-Colonel Maunisell, Ottawa, and Lieutenant Colonel Delaney, Quebec, were also present.

The president outlined the objects of the commission and its general scope was fully discussed. The commission has under consideration a large number of offers of private houses and other buildings for the purpose of convalescent homes. The secretary was directed to communicate with all who had made offers, to convey to them the thanks of the commission and to explain that owing to the uncertainty as to the number of invalided soldiers at present on their way from Europe, many of these places which are eminently suitable cannot at the moment be accepted.

Arrangements are being made to utilize part of the immigration building at Quebec as a distributing hospital. This building recently erected by the Dominion government, is admirably adapted for this purpose. It was decided to recommend that the benefits of the convalescent homes should be extended to invalided members of the Canadian expeditionary force who have not left for Europe.

The secretary was instructed to convey to the St. John Ambulance Association, the Red Cross Society and other voluntary organizations the thanks of the commission for their offers of services, which will be utilized whenever possible. Mr. H. Scammell, assistant censor at military headquarters, was appointed secretary. The offices of the commission will be at 22 Victoria Street, Ottawa. The next meeting of the commission will be held at Quebec.

The inventive genius of our time has been employed largely in devising destructive measures: the great guns with their infernal shells, the aeroplane, and the torpedo are used to destroy human life; preventive medicine and sanitation are ranged on the other side. The comparatively small number of cases of such destructive diseases as enteric and typhoid fever among the troops engaged in the present war shows how much has been done to preserve life. The mosquito has been conquered but a way of destroying the house fly is still to be discovered. In spite of lectures on the means of preventing the breeding of these insects the trenches are filled with millions of bluebottles and house-flies; they infest every corner, they cover every morsel of food, and settle with avidity upon the soldier sleeping in the dug-out and upon his wounded comrade. The distress thus caused can well be imagined, let alone the danger of an epidemic. To quote from a letter recently published in a daily paper: "If someone were to devise a means of ridding our men at the front of the millions of noisome flies which are pestering them these hot summer days he would earn the thanks of all the army."

THE College of Physicians and Surgeons of the Province of Saskatchewan decided at a recent meeting to discontinue the provincial medical examinations after December next in favour of the examinations of the Dominion Medical Council. The decision is an important one; it is a step further towards the establishment of a common standard of medical education. Saskatchewan is the first province to take such action and is to be congratulated upon the example thus set. Possibly the day is not far distant when there will be in the Dominion but one medical council, one national standard of medical education, and a general freedom to practise throughout the country.

Book Reviews

MEDICAL ELECTRICITY, ROENTGEN RAYS AND RADIUM, WITH A PRACTICAL CHAPTER ON PHOTOTHERAPY. By SINCLAIR TOUSEY. Second edition, thoroughly revised and greatly enlarged. Philadelphia and London, W. B. Saunders, 1915. Canadian agents, J. F. Hartz Company, Limited, Toronto. Price, cloth, \$7.50 net; half morocco, \$9.00 net.

This work is much more than a treatise on electro-therapeutics; it deals not only with this subject and with Röntgen rays, as the title implies, but also with such subjects as phototherapy, electricity occurring in animals and plants, the physiological effects of electricity on micro-organisms and on vertebrates, the pathological effects of electric tissues on the currents, and the use of radium.

Static electricity is first considered and the different methods of applying this form of electricity are made clear by means of simple diagrams. Dynamic electricity in its various forms is fully discussed and well illustrated by many diagrams. The mathematical side of the question is by no means forgotten and many formulæ for exact measurement of currents and expected results are given. Electrodiagnosis is taken up at some length and all the important points in the diagnostic and prognostic value of electricity seem to be at least mentioned.

The use of electricity in diseases of the nervous system is well covered and much information given. The author treats the subject conservatively and makes no extravagant claims. The *x*-ray, its theory and practice takes up almost five hundred pages of the book, and here, in addition to diagrams and radiograms, there are several colored plates of *x*-ray tubes in operation in conditions that diminish their efficiency. An interesting part of the subject of radiography that is fully discussed, and in which many convincing radiograms are shewn, is the use of the *x*-ray in dentistry. This is done by means of the author's fluoroscope, or, better by cinematograph film held in mouth by means of an aluminium film-carrier which the author has devised. A wider use of these methods would seem to be a distinct advance, and would give the dentist a much

more exact knowledge of the condition of the teeth than he can possibly have by the older and more frequently used methods.

A few misprints are noticeable, but, so far as seen, these are so obvious as to lead to little confusion.

MENTALLY DEFECTIVE CHILDREN. By ALFRED BINET and TH. SIMON, M.D. Authorized translation by W. B. DRUMMOND, M.B., C.M., F.R.C.P., with appendix containing the Binet-Simon tests of intelligence by MARGARET DRUMMOND and an introduction by PROFESSOR A. DARROCH. Price, 2s. 6d. London: Edward Arnold, 1914.

As Professor Darroch says in his introduction the Binet-Simon tests of children's intelligence have been the subject of much discussion during the past few years, both in England and in America. These tests have been used and are being used in every Juvenile Court which has a physician attached to it, and in all the schools for feeble-minded children. The tests, although admitted not to be absolutely correct, have furnished proof that the question of feeble-mindedness on this continent is a serious one and one which the State will soon have to face. In this small volume, Binet and Simon, in a very clear manner, discuss the psychology of a child, how to grapple with the problem of feeble-minded and backward children in schools, the method of distinguishing these children from normal ones, and the best method of treating them. For those who are interested in the problems of mental deficiency this book is indispensable.

SURGICAL SHOCK. ANOCI-ASSOCIATION. By GEORGE W. CRILE, M.D., and WILLIAM E. LOWER, M.D. Edited by AMY F. ROWLAND. W. B. Saunders Co., Philadelphia and London, 1914.

This work is a good piece of book-making in the good and bad senses of the phrase. Its get up is admirable: clear print on heavy (perhaps too heavy) paper, with excellent illustrations and plain, good binding. Its main thesis is that the prevention of shock is the beginning of surgery. To obtain a theory of shock, its causes and seat of action must be known. If we assume that fatigue or exhaustion of certain organs in the body is the result of shock, a histological survey of the tissues of a shocked organism will throw light on the problem. Such a survey has been made by Dr. Crile and his co-workers and they find that after producing shock by

anæsthesia, by trauma, by the injection of drugs, by physical exhaustion and insomnia, or by fear, the organs that suffer are the central nervous system, the liver and the suprarenals. After such shock the cells of the cortex of the brain and the cerebellum show marked chromatolysis, and the cells of the liver and suprarenal "degenerative" changes. If, by surgical technique, both in the ward and on the operating table, we can obviate these changes, then, the above assumption being true, we can do away with surgical shock.

Of the anæsthetics, nitrous-oxide with oxygen has the least effect on the tissues, ether is next, and last is chloroform. The effects of trauma on the tissues are abolished if we block the nerve impulses from the seat of the trauma on their way in to the central nervous system. Of the drugs strychnine produces similar effects to those of trauma, while morphine protects the body from shock. Therefore, Dr. Crile adopts into his technique the use of nitrous-oxide as anæsthetic, with the addition of a little ether in difficult cases. Morphine and scopolamin are used preoperatively to produce a calm and comfortable state of mind in the patient. Fear of the operation is obviated partly by these drugs and also by the reassuring attitude of the surgeons and nurses before the operation. During the operation the stimulation of pain developing (nociceptor) nerve-endings is avoided by sharp (and not tearing) dissection, and by blocking the paths of those nociceptor fibres that must be disturbed with novocain. (These nociceptor endings and fibres are mainly distributed to the skin, fasciae of muscles, etc.—parts of the body that have in phylogeny and ontogeny come into violent contact with environment). And finally the shock-producing effects of post-operative pain that are unavoidable even in spite of the above technique, are obviated by blocking the pain end organs at some distance from the wound by a lasting local anæsthetic (urea hydrochloride and quinine). By these means, it is claimed, the symptoms of surgical shock are abolished, and the statistics quoted in the book bear out this claim. Undoubtedly the idea at the back of the work is plausible, based as it is on Sherrington's admirable work on the central nervous system, the work of Cannon and T. R. Elliott on the suprarenal bodies, and MacLeod's work on the glycogenic function of the liver. Dr. Crile's theories and technique are worthy the sincere and scientific attention of the practising surgeon.

There is a necessary change, if we accept Dr. Crile's work, in views concerning the seat of action of the anæsthetic. It thrusts

its wedge, not between lower and higher brain centres as usually imagined, for under anæsthetic the cortical cells are still assailable by nociceptient impulses, but between these cells and the effect or organ (muscle or gland) and also between these cells and consciousness. Such a change in standpoint is easily put to the test of experiment and has been so put by Dr. Crile and his colleagues.

Perhaps the reason that Dr. Crile's technique has not been more widely accepted is that the arguments for it have been too plausible, too *facile*, and that his theories have been too ardently advertised by admiring disciples. The world, even the scientific world, too easily suspects the sincerity of a clever mind.

LECONS SUR LA LITHIASE BILIAIRE. Par A. CHAUFFARD avec 20 planches hors texte. Masson et Cie Editeurs, Libraires. De l'académie de Médecine. 120 Boulevard Saint-Germain. Paris, 1914.

It was in 1911 that M. Chauffard succeeded Professor Hayem in the chair of medicine at the St. Antoine Hospital; and during the winter and spring he gave a series of lectures on cholelithiasis. These have now appeared in book form together with his inaugural address. Chauffard has many of the qualities of an orator, and though as a writer his style is good, the reader misses much that the listener carries away. Our knowledge of the pathogenicity of this morbid state has been increased by the brilliant researches of the author over a period of many years. Cholelithiasis is much more frequent in the woman than in the man; pregnancy plays an important rôle in the production of this disease; and it is the hypercholesteræmia, genital in origin, that is the cause of this pathological condition. Heredity as a factor he minimizes; and he does not believe that typhoid fever has the ætiological significance that it is commonly credited with. His researches lead him to conclude that cholelithiasis is always accompanied by hypercholesteræmia; and that the Vichy cure causes a decrease of the cholesterine in the blood to within normal limits. Cholesterine is normally excreted by the liver, and it is a functional disturbance of the hepatic cells that brings about a retention of this substance in the blood, and a diminution in the bile passages, with a consequent formation of gall stones.

Pain, its cause, topographical distribution and diagnostic value, occupies two chapters. The last three lectures are given to treatment; dietetic, medicinal, hydromineral, and surgical. These

chapters are presented in a form characteristic of the French school of medicine, and are of value to the practitioner.

TEXT-BOOK OF THE PRACTICE OF MEDICINE. FOR STUDENTS AND PRACTITIONERS. By H. A. HARE, B.Sc., M.D. Third edition, revised and enlarged. Philadelphia and New York, Lea and Febiger, 1915. Price, cloth, \$6.00 net.

The third edition of this well-known text-book of medicine has appeared. The text has been carefully revised, some of the articles have been rewritten, much that is new has been added. It is a well bound book of 967 pages with 142 engravings and 16 plates in colours and monochrome. The salient features of the book are the easy style of the writer, the good illustrations, the few typographical errors, and well arranged table of contents and index. Many of the diseases, in spite of the limitations which a text-book requires, are described with a thoroughness of detail and completeness of form that will be appreciated by the student and practitioner. The article on typhoid fever will be found most helpful, so too the chapter on diabetes. Diseases of the circulation occupy seventy pages. It would have been well here if the author had given a classification of the arrhythmias and had made some mention of the Einthoven string galvanometer, and its value in the clinical examination of heart affections. In the chapter on diseases of the kidneys not sufficient importance is given to a salt free diet in the treatment of nephritis with oedema; and too little attention is paid to the prognostic value of the quantitative estimation of urea in the blood. The importance of venesection in uræmia should have been emphasized, and something more might have been said about hypertension in cardio-renal disease. The book can be recommended as an addition to the student's or practitioner's working library.

STUDENTS' MANUAL OF GYNECOLOGY. By JOHN OSBORN POLAK, M.Sc., M.D., F.A.C.S., Professor of Obstetrics and Gynecology, Long Island College Hospital. 12mo, 414 pages, illustrated with 100 engravings and 9 colored plates. Cloth, \$3.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1915.

This manual of gynaecology by Dr. John Osborn Polak has been written with a view to being used both by undergraduates and by general practitioners following graduate courses. It is a well-written work of about 400 pages and is especially to be commended

to those taking post-graduate courses. As is to be expected from the author, the operative treatment of lacerations of the pelvic floor, cystocele, and prolapse are very clearly outlined. Among the predisposing causes of prolapse great stress is laid on the frequent improper management of the puerperium during which the patient is kept unnecessarily long on her back and provided with a tight abdominal binder. Also the importance of medical supervision till the pelvic organs are proven once more normal in size and position. The technique of performing anterior colporrhaphy for the cure of cystocele is fully described and could be read with benefit by all, as in this operation many fail for lack of thoroughness. Some might question the statement that the treatment of acute septic endometritis is one solely of "intelligent inactivity" and that in such cases "the uterine content is left undisturbed, to be separated and dispelled by uterine contraction unless there is active haemorrhage." Certainly no harm can be done by the gentle digital removal of placental masses. The chapter on gynaecological diagnosis is especially well written. Throughout the work the important points in symptomatology, diagnosis and treatment have been italicized so that the reader can recognize the salient facts immediately.

THE following candidates passed the examinations of the Medical Council of Canada recently held at Winnipeg: F. A. Benner, Aylmer, Ontario; E. Bice, Clandeboy, Ontario; J. T. W. Boyd, Port Arthur, Ontario; W. L. Evans, St. Mary's, Ontario; G. Fenton, Big River, Saskatchewan; R. H. Fraser, Chatham, Ontario; J. Gemmill, Winnipeg; C. A. Graves, Mascott, British Columbia; H. J. Harris, Toronto; H. W. Hill, London, Ontario; J. B. Hirshberg, Bay City, Michigan; A. F. Laird, Winnipeg; G. A. Lamont, Guelph, Ontario; J. R. MacPherson, Toronto; J. Moriarty, Orillia, Ontario; H. W. Morley, Dauphin, Manitoba; H. R. Mustard, Victoria, British Columbia; T. J. Simpson, Waldemar, Ontario; P. P. Smyth, Toronto; C. W. Waas, Winnipeg; C. E. Walsh, Port Maitland, Nova Scotia.

Books Received

The following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

ALVEOLODENTAL PYORRHEA. By CHARLES C. BASS, professor of experimental medicine at the Tulane Medical College, and FOSTER M. JOHNS, instructor in the laboratories of clinical medicine at the Tulane Medical College. W. B. Saunders, Philadelphia and London, 1915. Price, \$2.00 net. Sole Canadian agents: J. F. Hartz Company, Ltd., Toronto.

AMOEBIASES AND THE DYSENTERIES. By LLEWELLYN POWELL PHILLIPS, M.A., M.D., B.C. (Cantab.), F.R.C.P. (Lond.), F.R.C.S. (England). H. K. Lewis, London, 1915. Price 6s. 6d. net.

COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINNESOTA. Edited by MRS. M. E. MELLISH. Volume VI. W. B. Saunders, Philadelphia and London, 1915. Price, cloth, \$5.50 net. Half morocco, \$7.00 net.

THE COMMONER DISEASES, THEIR CAUSES AND EFFECTS. By DR. LEONHARD JORES, O.O., Professor der allgemeinen Pathologie an der Universität Marburg. Authorized English translation by WILLIAM H. WOGLOM, assistant professor in Columbia University. J. B. Lippincott Company, Philadelphia, 1915. Price, \$4.00 net.

DIARRHÆAL, INFLAMMATORY, OBSTRUCTIVE AND PARASITIC DISEASES OF THE GASTRO-INTESTINAL TRACT. By SAMUEL GOODWIN GANT, M.D., LL.D., professor of diseases of the colon, sigmoid flexure, rectum and anus, New York Post-Graduate Medical School and Hospital. W. B. Saunders, Philadelphia and London, 1915. Price, cloth, \$6.00 net, half morocco, \$7.50 net. Sole Canadian agents, J. F. Hartz Company, Ltd., Toronto.

DIABETES MELLITUS. Designed for the use of practitioners of medicine. By NELLIS B. FOSTER, M.D., assistant professor of medicine, Cornell University. J. B. Lippincott Company, 1915. Price, \$3.00 net.

DISEASES OF THE DIGESTIVE ORGANS, WITH SPECIAL REFERENCE TO THEIR DIAGNOSIS AND TREATMENT. By CHARLES D. AARON, Sc.D., M.D., professor of gastro-enterology in the Detroit College of medicine and surgery; consulting Gastro-enterologist to Harper Hospital. Lea and Febiger, Philadelphia and New York, 1915. Price, cloth, \$6.00 net.

THE INVERTEBRAL FORAMINA IN MAN. The morphology of the intervertebral foramina in man, including a description of their contents and adjacent parts with a special reference to the nervous structures. By HAROLD SWANBERG. Chicago Scientific Publishing Company, Chicago, 1915. Price, \$1.75.

MANUAL OF GYNÆCOLOGY, FOR STUDENTS AND PRACTITIONERS. By SAMUEL J. CAMERON, assistant to the regius professor of midwifery, University of Glasgow; gynæcologist and obstetric surgeon to the Royal Glasgow Maternity and Women's Hospital. Edwin Arnold, London, 1915. Price, 18s net.

MATERIA MEDICA AND PHARMACY; FOR MEDICAL STUDENTS; WITH AN APPENDIX ON INCOMPATIBILITY. Third edition. By REGINALD R. BENNETT, B.Sc. (Lond.), F.I.C. H. K. Lewis, London, 1915. Price, 4s. 6d. net.

OUTLINE OF INTERNAL MEDICINE, FOR THE USE OF NURSES. By CLIFFORD BAILEY FARR, A.M., M.D. Lea and Febiger, Philadelphia and New York, 1915.

PRINCIPLES OF BACTERIOLOGY, A PRACTICAL MANUAL FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By A. C. ABBOTT, M.D., professor of hygiene and bacteriology, University of Pennsylvania. Lea and Febiger, Philadelphia and New York, 1915.

URGENT SYMPTOMS IN MEDICAL PRACTICE. By ROBERT SAUNDBY, M.D., Edin., Lt.-Col. R.A.M.C. Edwin Arnold, M.D., London, 1915. Price, 7s. 6d. net.

Res Judicatae

WAR WOUNDS—THE PREVALENCE OF INFECTION—TREATMENT

IN the present war the wounds that come under treatment in the base hospitals are, in one respect at least, very similar to those met with in the American Civil War and the Franco-Prussian war: they are all infected, and for the most part heavily infected. They are the inevitable consequence of trench warfare, where strict personal hygiene is an impossibility, where the severely wounded may remain unattended for hours or even days, and where the seat of strife is in districts long under cultivation. There is little scope for primary aseptic surgery; and in major injuries antiseptics fail to prevent the development of infections deeply implanted at the time of injury. We are thus hurled back to the pre-Listerian era; to the era of unsutured wounds, early amputations, spreading cellulitis, and gangrene. Many cases of fracture and of injury to the knee-joint have had to be subjected to amputation.

Shrapnel and shell produce lacerated and contused wounds; frequently carry in dirt and fragments of clothing; and are invariably the conveyers of infection, either gas or tetanus bacilli or the common pyogenic organisms.

In the treatment of these lacerated and infected wounds drainage is the key-note. This is secured by

1. The avoidance of sutures and packing;
2. The use of drainage tubes;
3. The promotion of lymph lavage by
 - (a) The use of dressings soaked in hypertonic solutions, (preferably $\frac{1}{2}$ per cent. citrate of soda and 5 per cent. salt);
 - (b) Warm fomentations;
 - (c) Continuous irrigations or immersion.

If seen early, excision of the lacerated and devitalized tissue and cauterization have had some vogue. Swabbing with 2 per cent. alcoholic solution of iodine, or irrigation with tincture of iodine 2 drachms to the pint of water, carbolic acid 1:20 to 1:40, lysol 1 drachm to the pint, and peroxide of hydrogen, have proved useful. Peroxide appears to be especially indicated in sloughing or gangren-

ous wounds; but once the infection has made headway, the use of antiseptics has, in the opinion of many, proved utterly futile.

For gas bacillus infections no specific treatment has yet been found. Professor Weinberg of the Pasteur Institute has produced a serum of which hope is entertained. Infusion of oxygen into the tissues beyond the zone of infection is also favoured. The best results, however, are obtained by early amputation, leaving the stump wide open, and applying peroxide of hydrogen. Crile states that, while in addition to the above methods heavy cauterizations are advocated by others, the mastery of the disease is for the future.

We are thus face to face with the fact that the problem of wound infection still remains unsolved, and our greatest hope at the present time undoubtedly is in the researches of Colonel Sir A. E. Wright at the Research Laboratory attached to No. 13 General Hospital, Boulogne-sur-Mer. In a series of four extremely engrossing articles, appearing in April and May numbers of the *British Medical Journal*, Wright describes the nature of his investigations on wound infections. Up to the present his bacteriological researches have led him to urge the importance of drainage and the promotion of lymph lavage, by the methods already described, with the use in certain cases of specific vaccines.

The wounds which are not infected are those produced by rifle bullets. The South African type of wound is, however, unfortunately only occasionally seen in the base hospitals of the Western front. They are clean cut and tend to heal rapidly. In these cases the associated injuries to bones, internal organs, blood vessels, and nerves, offer a field for aseptic surgery; and the results are those obtained in all well organized hospitals the world over.

Obituary

DR. ARTHUR PALLANT, of Victoria, British Columbia, was accidentally killed on June 25th by being crushed beneath his automobile, which overturned. Dr. Pallant, who was in his sixty-first year, was born at Maidenhead, England, where he first went into practice. Later, he removed to Harley Street, London, and seven years ago he retired and went to Vancouver. He leaves a widow, one daughter and two sons, one of whom, Lieutenant H. Pallant, is on active service.

DR. HARRY WILLIAMS was shot and instantly killed on July 2nd by a man named Holmes, of Gravenhurst. Holmes, who was suffering from tuberculosis, was a patient of Dr. Williams at the Gravenhurst Sanitarium. His case was incurable, and it is supposed that the crime was committed in a fit of insanity, brought on, possibly, by the refusal of Dr. Williams to give further treatment. After shooting Dr. Williams, Holmes shot himself. Dr. Williams was the son of the late Dr. Williams, of Allenford, and grandson of the late Bishop Williams, general superintendent of the Methodist Church in Canada. He was about thirty-five years of age. After practicing for some time in Allenford, Dr. Williams went to the Old Country, where he did some post-graduate work. On his return to Canada he joined the staff of the Gravenhurst Sanitarium. At the time of his death, he was looking after the practice of Dr. Victor Ross, of Hamilton.

DR. THOMAS WYLIE, of Toronto, died June 25th. Born in Toronto in 1841, Thomas Wylie taught for four years before entering upon the study of medicine. In 1866 he graduated from Victoria University. He went into practice at Manilla, then at Dunstroon, and later at Stayner, Ontario, where he practised for seventeen years. From 1891 to the time of his death he practised in Toronto. Dr. Wylie, at one time, was Conservative member of the Provincial Parliament for West Simcoe.

DR. H. W. MACGOWAN, of Knowlton, Quebec, died June 10th. Henry Walter Macgowan was born at Kingsley, Quebec, in 1841. He graduated from McGill University in 1865 and went into practice at Bolton Centre, Quebec. After practising there for about ten years Dr. Macgowan removed to Stanstead and ten years later left Stanstead for Knowlton.

DR. MICHAEL B. MORAN died at St. Joseph's Hospital, Omaha, on June 15th, in the thirty-fifth year of his age. Dr. Moran was born in Nebraska. He graduated from Queen's University last spring.

DR. GUILFORD DUDLEY YOKOM died at St. Joseph, Missouri, in the seventy-first year of his age. Dr. Yokom was born near Niagara Falls in 1844. He graduated in 1879 and went into practice in the United States.

DR. ROBERT J. LOVE died at Bangor, Maine, on June 10th, in the fifty-eighth year of his age. Dr. Love was born at Moore's Mills, British Columbia. He graduated from the University of New York in 1885 and went into practice first at Milltown, then at Kingman, and later at Danforth, Maine.

DR. MARK BICE, of Eburne, British Columbia, died July 13th in the seventy-first year of his age.

DR. ANDREW W. H. LINDSAY, of Halifax, died from heart failure July 21st, while in attendance at a meeting of the Nova Scotia Medical Board, of which he had been the registrar for thirty years. Dr. Lindsay was in the sixty-fourth year of his age; he was born at Pictou, Nova Scotia. After attending the Pictou Academy, he entered Dalhousie University and graduated in 1875. He subsequently took a post-graduate course at the University of Edinburgh and, in 1877, received the degrees of M.B., C.M., and L.R.C.P. On his return to Canada, Dr. Lindsay commenced to practise in Halifax. He became associated with the Halifax Medical College, of which he was a strong supporter until its incorporation into the University. In the words of the President of Dalhousie University, Dr. Lindsay was known as an unusually brilliant teacher of anatomy. His knowledge of the subject was profound, and he never tired of imparting it to those who desired to learn. By the death of Dr. Lindsay, Dalhousie loses one of her staunchest and most valuable friends. His time, his money, his thought were never stinted when the interests of the medical school were in question, and it is no exaggeration to say that no one has done more for medical education in Halifax than Dr. Lindsay.

DR. SAMUEL NASH, of Bath, Ontario, died July 7th, in the eighty-third year of his age. Dr. Nash was born at Milford, Ontario. He is survived by five sons and six daughters.

DR. T. G. Wilson, of St. Placide, Quebec, died July 7th. Dr. Wilson was born at St. Jerome; he was sixty-six years of age and had been in practice at St. Placide for forty years.

DR. THOMAS CECIL WELDON, of Thorold, Ontario, died at the Minnawaski Hospital, Gravenhurst.

News

MARITIME PROVINCES

DURING the period between January, 1914 and May, 1915, 48 patients were admitted to the Hazelwood Sanatorium at Halifax. All were suffering from tuberculosis in an advanced stage. Twenty-eight patients were discharged, 6 of whom died subsequently and 20 deaths occurred at the Sanatorium. Improvement was shown in 12 cases and 9 are now at work.

THE Halifax Board of Health has appointed a committee to consider the establishment of a municipal abattoir subject to government inspection.

THE corner stone of the new Miramichi hospital at Newcastle, New Brunswick, was laid July 1st. The hospital, when completed, will contain accommodation for thirty-one patients.

THE annual report of the Prince County Hospital, Prince Edward Island, shows that from June 1st, 1914, to May 31st, 1915, 303 patients were admitted. The accommodation is already overtaxed and it has been decided to enlarge the building.

ONTARIO

THE Women's College Hospital and Dispensary at Toronto was formally opened on Saturday, July 17th. Dr. Geraldine Oakley has been appointed medical superintendent of the hospital, which has twenty-one beds.

A WHOOPING COUGH clinic has been established at the Toronto Hospital for sick children. This is the first clinic of the kind to be opened on this continent.

MANITOBA

DURING the first four months of the present year, 4,784 patients received treatment in the Winnipeg General Hospital. This is a thousand more than during the same period last year.

DR. J. M. LACEY, of Winnipeg, has been appointed assistant chief medical officer for the National Transcontinental railway.

SASKATCHEWAN

DR. John Franklin Duncan, of London, Ontario, has been appointed assistant surgeon to the mounted police stationed at Regina.

THE following have been granted licence to practise in the province: Drs. C. O. Banting, S. E. Burnham, W. J. C. Brawley, W. N. Cole, J. J. Finn, J. W. H. Huykman, A. Keay, J. A. Mathieu, C. E. Scribner, M. Shipley, H. Van De Erve, V. Van De Erve, W. A. Weaver, C. K. Whitelock, H. C. Whitemarsh, I. C. J. Wigg, R. M. Neilson and R. O. T. Rice. Supplemental examinations will be taken by Drs. J. Bruce, L. D. Chapman, J. J. Hetherington, J. L. O. Saucier, A. J. Lafleur, and J. N. Carnduff.

A NURSING home, with accommodation for thirty-five nurses, and a temporary isolation hospital are to be added to the Grey Nuns Hospital at Regina.

ONE hundred and thirty-five cases of chicken-pox were reported in Saskatoon during the month of Jun. Other cases of infectious disease were: measles, 37 cases; mumps, 4 cases; pulmonary tuberculosis, 1 case; erysipelas, 1 case; syphilis, 2 cases.

ALBERTA

THE following physicians have been elected members of the Council of the College of Physicians and Surgeons of the province: Dr. John Park, of Edmonton; Dr. F. W. Crang, of Edmonton South; Dr. D. G. Duggan, of Killam; Dr. R. G. Brett, of Banff; Dr. R. D. Sanson, of Calgary; Dr. G. E. Learmouth, of High River, and Dr. W. S. Galbraith, of Medicine Hat.

THE following resolution was passed unanimously at a meeting of the Edmonton Academy of Medicine on July 15th:

"That the Academy of Medicine of the City of Edmonton go on record as being in favor of prohibition in the Province of Alberta and endorse the proposed liquor act for the suppression of the liquor traffic in Alberta."

BRITISH COLUMBIA

THE first annual meeting of the board of the Canadian Pacific Railway Employee's Medical Association took place at Vancouver on June 24th, 25th and 26th. The attendance was good and representatives from all parts of the province were present. The election of officers resulted as follows: president, Mr. F. W. Peters (re-elected); vice-president, Mr. G. R. Thompson, (re-elected), of Smelter; secretary-treasurer, Mr. A. M. James, of Vancouver; executive committee, Messrs. F. W. Peters and D. A. Munro, of Vancouver; R. H. Urquhart of Revelstoke; F. R. McCharles, of Nelson, and D. Proctor, of Vancouver.

DR. L. T. DAVIS, of Vancouver, has been appointed ship's doctor on the Blue Funnel Line Steamship *Talhybius*.

MEDICAL COLLEGES

Queen's University

AMONG many other gifts, a motor ambulance has been given to Queen's Military Hospital by Messrs. A. Davis & Sons, Limited, of Kingston.

ARMY MEDICAL SERVICES

DR. G. G. NASMITH is now in charge of the bacteriological work of the Indian corps in addition to looking after the water supply and sanitation of the first Army Corps at the front.

DR. CLARKE, of Calgary, with a party of forty members of the Army Medical Corps, recently left Calgary en route for the front.

DR. ELLA SCARLETT SYNGE, of Vancouver, has left for Serbia in command of the Vancouver Women's Volunteer Reserve. The unit will probably be established at Nisch.

DRS. F. S. KEELE and H. A. Gordon, of Portage la Prairie, have left for France to join the staff of No. 3 Stationary Hospital.

DR. J. H. HAMILTON, of Revelstoke, British Columbia, has been gazetted medical officer to the fifty-fourth battalion, which is now in camp at Vernon, British Columbia.

LIEUTENANT LLOYD WARNER, A.M.C., who for the past year has been serving as house surgeon at the Winnipeg General Hospital, has left for service overseas.

THE following doctors have joined the Royal Army Medical Corps: Dr. H. J. Williamson, captain, and Dr. Hodder, of Port Arthur, Ontario; Dr. J. Bryce McMurrich, Dr. S. J. N. Magwood, of Toronto; Dr. R. R. Wallace, of Hamilton; Dr. W. W. Pirt, of Carman, Manitoba; Dr. R. D. Nasmyth, of Moose Jaw; Dr. Kalichmann, of Winnipeg; Drs. W. D. Ferris, W. A. Proud, E. Sheffield, and F. A. Keillor, of Edmonton; Dr. Ross Millar, of Amherst, Nova Scotia; Dr. R. J. Kee, of Niagara-on-the-Lake; Dr. R. W. Young, of Waterloo, Ontario; Dr. C. A. Ings, of Calgary; Dr. Henderson, of Sarnia; Dr. W. S. MacDonnell, of Syndey, Nova Scotia; Dr. V. F. Stock, of Stratford, Ontario; Dr. Thos. H. Lunney, of St. John, New Brunswick; Dr. James Sutherland, of Blaine, Saskatchewan; Drs. W. A. Costain, S. H. McCoy, of Toronto; Dr. G. H. L. Armstrong, of Echo Bay; and Dr. Gavillier, of Owen Sound, Ontario.

THE following medical men attached to the Canadian Army Medical Corps have been gazetted to temporary lieutenancies in the Royal Army Medical Corps: Lieutenants A. M. Fisher, S. S. King, C. D. Hamilton, W. J. Grant, C. A. Greaves, W. C. Gowdey, H. Lasnier, C. W. Morris, A. J. Lomas, T. J. Costello, W. W. Patton, J. J. Thompson, W. F. MacDonald, F. J. Brodie, W. P. Mackey, G. W. Whitman, H. S. Moore, B. E. Lang, A. R. Thomson, J. C. Chisholm, G. F. Hill, H. M. Godfrey, N. Mac-Donald, R. E. Johnston, Capt. Johnson, H. G. Goulthard, L. A. C. Panton, N. E. MacDougall, M. J. Vigneux, J. D. Adamson, W. W. Kennedy, R. Ingram, O. E. Finch, W. H. Lambert.

The following non-commissioned officers and men are promoted to be temporary lieutenants: Sergeant-Major Kidd, Sergeant MacLachlan, Sergeant McQuay, Corporal Coulter, Private M. C. Burke, Private A. D. Forbes; to be temporary second lieutenants: S. A. Forbes, H. A. Ash; to be temporary quartermaster with honorary rank of lieutenant: C. Grayson.

DR. MONTAGUE, of Winnipeg, has been gazetted Major with the honorary rank of colonel in the Army Medical Corps, and will leave shortly for England. Dr. Montague was Minister of Public Works in the Roblin government.

DR. W. B. COSBY who has been serving as house surgeon at the Toronto General Hospital, has been appointed medical officer of the 58th Battalion.

A COURSE of instruction is to be held early this month at the mobilization camp, Sarcee Reserve, Calgary. Medical practitioners who are registered in the Province of Alberta and who have joined the Army Medical Corps are eligible to attend the course. They will receive \$2.00 a day and a field allowance of sixty cents a day and, on completion of the course, will be attached to the field ambulance dépôt at Calgary.

DR. J. F. HUMMELL, of Stratford, Ontario, who was wounded on May 14th, has been recommended for the Victoria Cross. Dr. Hummell is now with the Canadian Field Ambulance.

DR. GORDON D. ALKINSON, of Derby Junction, New Brunswick, has left for Serbia.

It is reported that Mr. H. S. Beland, M.P., is a prisoner of war.

No. 5 General Hospital, C E. F., is now in training on Macaulay Plains, British Columbia. The unit was offered by the province of British Columbia in April, the offer being made through Major Hart of Victoria; the unit was accepted early in June and mobilization was at once commenced. The credit of making the first proposal in connexion with the matter goes to the Vancouver General Hospital. Substantial gifts, among them two motor ambulances, have already been made to the hospital and it is the intention of the Red Cross Society to organize a tag day throughout the province in order to raise the extra funds needed for equipment. The numerical strength of the corps is about 176 and includes 73 nursing sisters. The following is the list of officers.

Commanding Officer: Major E. C. Hart, P.A.D.M.S., Victoria.
Staff: Major F. C. McTavish, Vancouver; Captain S. Bonnell, Fernie; Captain R. B. Boucher, Vancouver; Captain H. L. Burris, Kamloops; Captain J. A. E. Campbell, Vancouver; Captain W. A. Clarke, Vancouver; Captain D. A. Dunbar, Burnaby; Captain A.

C. Frost, Ladysmith; Captain A. J. Gibson, Victoria; Captain T. B. Green, New Westminster; Captain D. P. Hanington, Wilmer; Captain J. H. Hogle, Vancouver; Captain H. C. L. Lindsay, Vancouver; Captain H. H. McIntosh, Vancouver; Captain W. B. McKechnie, Vancouver; Captain C. S. McKee, Vancouver; Captain G. H. Manchester, New Westminster; Captain D. J. Millard, N. Battleford; Captain R. L. Miller, Victoria; Captain A. S. Monro, Vancouver; Captain F. J. Nicholson, Vancouver; Captain L. J. O'Brien, Nanaimo; Captain F. P. Patterson, Vancouver; Captain A. P. Procter, Vancouver; Captain H. Robertson, Victoria; Captain A. B. Schinbein, Vancouver; Captain W. H. Sutherland, Revelstoke; Captain W. P. Walker, Victoria; Captain J. T. Wall, Prince Rupert; Captain H. A. Whillans, Victoria; Captain W. A. Wilson, Victoria; Quartermasters: Captain R. F. Winch, Vancouver; Captain J. Lewin, Victoria; Dental Surgeon: Captain L. Hartman, Victoria; Warrant officers: Sergt.-Major R. Glass, R.A.M.C., Vancouver; Sergt.-Major A. Morrison, Vancouver.

THE provincial government will contribute \$10,000 towards the cost of equipment of the stationary field hospital which is to be sent overseas from the province of Saskatchewan. An equal sum will be contributed by the College of Physicians and Surgeons and it is hoped that a further \$20,000 will be subscribed by various organizations in the province.

THE following is an extract from a letter from Dr. Hanford McKee, of Montreal, who is in charge of a hospital in France.

Since coming to France on February 2nd, there has been little time for anything but work. I have charge of a field hospital of over three hundred beds. We have the beds in large Indian pattern tents, which hold eight beds with bed-side tables and a large central table, and still have lots of room for moving about with a stretcher. I have seven of these tents in a row, making wards of fifty-six beds. We have a large tent for a dressing tent, a large one for a dispensary, two for operating rooms, one for *x*-ray, and one for laboratory. Williams of Sherbrooke, Munroe of Saskatoon, Morris of Windsor, Nova Scotia, and Bauld of Montreal, look after the surgical work, while Gwyn of Philadelphia does medicine and runs the laboratory. A very efficient staff and they have done some splendid work here. We also have thirty-five nurses, among whom are Miss Galt and Miss Upton, Montreal General Hospital nurses. The work comes in batches, of course, and when the rush is on we have just

all we can do. The surgery varies to all degrees, and we have found the cases do remarkably well with the open-air treatment that we are able to give them. Gwyn has done some excellent work. We have had quite a few cases of what they call spring nephritis. It comes on very quickly, the patient getting to the convulsion stage in a day or two. The condition subsides as quickly as it starts. The gas cases have been very interesting clinically, but like so many things of clinical interest, very disastrous for the patient. Gwyn says they get an acute oedema of the lungs, a non-septic pneumonia, with a bronchitis. The kidneys are also affected and, in some cases, the feet have had the appearance one gets in Raynaud's disease. Gwyn has done well with his cases, with atropine and morphine. Sir John Bradford looks upon the condition as an acidosis and has been working along that line. Our cases have all recovered. A lot of the gas cases came in with marked photophobia and spasm of the lids. This was followed in a few days by quite a severe iritis but whether that was a coincidence or not I am not prepared to say as yet. I have had a lot of eye and ear work, mostly radical surgical methods, as most of the eye injuries are very severe. Most of my time, though, is taken up with administration of the different branches of the hospital, and I don't care to have any more to do or any more responsibility than I have had. The amount of office work in a military hospital of even this size is considerable. We can hear the boom of the big guns here, and can tell pretty well when to get ready for casualties. Some of the men tell very interesting tales, but all are agreed that we need more big guns, and more still. One big Scotchman broke up a discussion on the war the other day, in one of the wards, by saying he thought the first ten years would be the hardest! Another one said, "Man, but it was grand to toss them!" meaning bayonetting them and throwing them over your head. I have never seen anything more sickening in my life than the ambulance train loads that one sees sent in here. Personally I feel very pessimistic over the war, and fear it will last a long while yet. However, we'll hope on and hope ever.

CORRESPONDENCE FROM THE SEAT OF WAR

LA PANNE, BELGIUM, MAY 20th, 1915

SIR WILLIAM OSLER was kind enough to send my last two letters out to THE CANADIAN MEDICAL ASSOCIATION JOURNAL. However, on this occasion I have determined to send one direct.

About the middle of February Dr. Depage prepared for heavy casualties in the spring and began to enlarge the hospital at La Panne so that 1,000 patients might be accommodated. At present all the new galvanized iron buildings are almost completed, and indeed, for a short time Pavilion I, or "British Pavillon", with its one hundred beds was filled. Part of the "Everyman Pavillon" has been opened and the "Pavillon Albert-Elisabeth" is shortly to receive patients. No expense seems to have been spared and for temporary buildings they seem well nigh luxurious. I cannot believe that the British hospitals are as well fitted up. All these pavilions have one or more operating rooms. The reception pavilion, where all the wounded will be brought on their arrival and where x-ray pictures will be taken and immediate operations performed is nearly ready. It will contain forty beds. A new laundry and garage have been erected, a villa has been made to accommodate the pathological laboratory, the kitchens and dining room have been enlarged and you will understand that the Belgian soldiers and civilian workmen have been kept very busy. More villas have been commandeered as the staff of doctors and nurses has greatly increased. It is almost incredible to us and it is no wonder that our visitors are surprised when we take them into the little villa where scalpels, scissors and all kinds of forceps are made from the rough, unshapened metal into the finished product, with nickel plating and all. Dr. Depage is determined to have everything at hand and only the other day a long needle for hypodermic injections of oxygen was made for him in a few hours. Soldiers were found who had been cutlers and metal workers "*en civil*" and perhaps they are not sorry to leave the trenches!

A shortage of Red Cross and St. John's nurses at Boulogne began to show itself and some of those lent to Dr. Depage were recalled: now, however, thirty-four of the American Red Cross have arrived and the twenty Canadian nurses are in London on their way here. Five American Red Cross surgeons have recently

come and more Belgian surgeons have joined our forces so, at present, there are almost thirty on the staff.

One has to admit that it is better to be prepared, but it seems questionable whether the thousand beds will ever be filled with acute cases (for surely the convalescent should not be kept so close to the firing line) especially since the Belgian army a short time ago has opened a hospital of about 500 beds near here on the road between Furnes and Dunkerque. Up till now we have never had more than 300 patients in the hospital. The work is spasmodic, but it is not difficult to imagine that if fifty-eight cases were admitted in a few hours time we must have been very busy for a day or so operating or doing heavy dressings. The severe fighting has all been in the neighbourhood of Ypres and so to the south of us, but when Ypres and Poperinghe were so much shelled we felt the effects and whole hospitals of civilian and military wounded were evacuated and the patients sent up to us. It is sad to see the wounded civilians still coming in and the blame must not be placed altogether at the door of the Germans. The ignorant peasants who know no place but their little home should be compelled by the Belgian government to leave the dangerous part of the country. In one room on our floor we had five wounded children at one time, one little baby of three weeks lost its mother by the same shell or bomb that tore away part of its foot. Perhaps by this time pictures of these children in the illustrated papers have reached Canada. Civilians are still to be found in towns like Furnes and Coxyde, which have been shelled by the Germans off and on for months and peasants are living at this moment in cottages between the lines of hostile trenches. A German prisoner has told me how kind these people were in selling eggs and milk to them: I am afraid that to many of them the offer of money for their "itching palms" has been too tempting and they have become paid spies.

With the exception of a few bombs dropped by the Germans on February 26th and which did little damage, La Panne has been left untouched though on nearly every fine day the German machines fly over us and are shelled at with great vigour by the Belgian guns hidden on the shore and in the sand dunes about here. "Why don't the Germans shell us?" is a question everyone asks when he realises that the big German guns, which have so recently bombarded Dunkerque at a distance of twenty-three or twenty-four miles are only twelve miles away from us and, of course, the smaller guns just above Nieuport are much closer. Some answer that we are not shelled because the Queen, once a Bavarian princess, lives here, but

she has been in England on several occasions for two weeks at a time and that fact must have been known to the enemy. La Panne is not a very important place in the military sense, but there are always troops to the number of 12,000 to 20,000 resting here and staff officers are quartered in the hotels. On slack days, when people have time to think or to invent, we always hear the same rumour—it is an old piece of gossip by now—that a message has been dropped from an aeroplane to the effect that we are to be bombarded. "Next Sunday" seems to be the favourite day, but it is like the children's saying: "Always jam to-morrow, but never jam to-day," and nothing has happened yet. We often realize that we are close to the firing line and it is a fine sight to see the British monitors (almost the oldest boats now in use) firing with their 9-inch gun at the German batteries beyond Nieuport. These boats are sometimes stationed a few hundred yards out from shore, and just opposite the hospital. Of course a British aeroplane, above the object aimed at, telegraphs back by wireless the result of the shot and thus directs the firing. Twice the H.M.S. V— has fired her 12-inch guns. Though she was more than three miles out to sea, the noise was terrific and shook all the buildings here. A hydro-aeroplane has been about several times. It is a very pretty sight to see it come down on the water and after running along a little way, on its floats, rise again on the wing. The Belgian recruits in the meanwhile are shooting at targets set up on the shore and it is almost humorous when one knows that real live Germans are not a great way off! On two occasions floating mines have been cast up on shore—the first was emptied successfully, but a soldier became impatient with the tightly-screwed nut of the second and the deadly thing exploded and killed four soldiers outright and wounded several others. Mines should be shot at with guns and exploded in this way.

On April 5th we witnessed an interesting ceremony, a review and march past of the troops. Prince Leopold, aged about fourteen, appeared for the first time as a private and was presented to his regiment, the "12ièm de ligne". We saw him from a short distance trudging along manfully in the heavy sand close to the standard bearer. The King and Queen of the Belgians were there, but the most interesting figure was that of a boy-scout (13½ years) who was marching with the men. He was carrying his carbine for the first time—the others, of course, have rifles. This regiment covered itself with glory at Liège but was in danger of being surrounded and the boy scout offered his services and led all the

soldiers through narrow streets and lanes to the other side of the town and effected their escape. As a reward the little fellow was allowed to join the colours. At this and other reviews we saw the queen, but we have been all rather amused, in reading accounts of La Panne, to be told that "shells were bursting about Her Majesty." I cannot testify to the truth of all stories of La Panne. An article in the St. Louis *Post-Despatch* appealed much to the sense of humour of us all and made delightful reading.

Since the days have become longer and the weather warmer it has been a great pleasure to walk up the shore or out over the dunes. The fishing boats go out at high tide, the shore presents a much busier appearance and the Belgian soldiers go in bathing, evidently a company at a time. One may scare up an occasional pheasant on the dunes and the skylarks mount high in the air singing merrily, oblivious to the "avions" or "bird machines" above them. We have several times visited a one-armed windmill which we can see from the hospital. It is a very massive affair, and carved in one of the big pieces of timber is "Ian Façon, anno 1683." The fear that communications may be carried on with the enemy is great and the miller is compelled by the authorities to keep the arm perpendicular, when not in motion. It might so readily be employed as a semaphore as it stands out so prominently on the skyline. There is no doubt that there are spies about, for the telephone wire between here and a look-out point only ten minutes' walk up the coast, was cut and mended three times two Sundays ago: again, a Belgian officer told me he was sure there was a spy in his company. He noticed that when they reached a certain point at the same time every evening, on their way to relieve another body of men in the trenches, the Germans always shelled them. To change the time of departure every evening was of no avail, for a sky-rocket was sent up immediately behind the company as they were on the point of starting! The other day, too, we walked up to Oestdunkerque and to the French battery on the coast close to Nieuport. The colonel of the Zouaves, with whom we had tea, said he was convinced that there was a telephone wire direct to the German headquarters of that district, for he and his staff were inevitably shelled when they moved about. Though after repeated searchings, up till that time the wire could not be found.

The "Grand Place" at Furnes has lost some of its buildings, but the Hôtel de Ville and the "House of the Spanish Officers" had not been touched when we were last there. The Belgian Field

Hospital (British surgeons) has had to move to Hoogstade for the school in which it was situated has been struck several times by shells. It is still a dressing station and the operating room is in the cellar. Indeed the other day the chief of police and the brewer of the town were dressed there before being brought to us at La Panne.

Just off the road to Furnes there is a very interesting spot. In the eleventh century this was the site of the "Abbaye de St. Idesbold." For centuries after, the fine old building with its round tower was a farmhouse and now large canvas aerodromes in the fields surround it and French, Belgian and British machines are housed there. A Belgian officer who had been a patient in the hospital showed us about this aviation park. It seems that the Renault is as satisfactory as any engine they have. On the "Scouting Machines" a wireless transmitter is carried, but no receiver. In sending messages a coil of about fifty feet of wire is dropped. At closer range we saw the machine gun. The "observateur" works this from his seat or uses a rifle and also releases the bombs which are slung like pails beneath the "body." Some of the British airmen who did such good work above Ostende told us at La Panne that one cannot be at all sure of hitting the object aimed at unless he descends to about two hundred feet above it. "Then," as he expressed it, "the enemy turn the hose on us"—for the bullets come from the anti-aircraft guns exactly like a stream of water.

There is a British Mission at La Panne, quartered in a villa close to the "Palace". A British colonel is in charge and with him are associated other army officers of high station and a naval captain. They do much to coördinate the work of the Belgian and British armies and to direct the work of the "monitors" and other British ships so that they may fire in conjunction with the British naval guns on land. They also keep an eye on the Britishers in La Panne to see that we are bona fide Red Cross workers and not spies! The "Mission" receives despatches from British headquarters every day and we are constantly endeavouring to learn the latest news from them but, alas, they are never very communicative.

Maxine Elliott has lived all the winter on a barge between Furnes and Adinkerque. She distributes clothing and food to the Belgian civilians. Some of us had the pleasure of having tea with her one afternoon and the barge, rude enough on the outside, was fitted up in a very comfortable fashion. Many women are doing

splendid work in Flanders and the authoress, Sarah Macnaughton, has a soup kitchen for the civilians, also close to Adinkerque.

Apart from occasional cases of scarlet fever which have broken out in the hospital we have seen little truly medical.

To turn to the wounded. As before, most of the wounds have been caused by fragments of shell or shrapnel bullets but it is interesting to note that one night after a German charge, in which the enemy took a Belgian trench, practically all of the twenty-eight who were admitted were wounded by rifle bullets and about a third of these had been hit in the left hand or arm. These parts of course are most exposed in firing from a trench. Of bayonet wounds I have seen only two and one of these was accidentally inflicted in La Panne. We have seen several cases of "accidental" shooting of the hand amongst soldiers who have just received orders to resume life "*dans les tranchées*". We have had several cases wounded by hand grenades and these may be very troublesome. Not all our cases were due to wounds. I saw, for the first time, a posterior dislocation of the clavicle in a soldier who had been injured in an automobile smash-up. We also had two football accidents, a broken leg and an ugly cut running along the infraorbital margin to the inner canthus of the eye.

Contrary to what was expected, we have had very few cases of aneurysms, and no arterio-venous ones with a rough machinery murmur, as I had seen at Oxford. Perhaps it is because shell and shrapnel bullet wounds so largely predominate. I can only recall two cases of aneurysm, the first, where a rifle bullet passed through the thigh just above the knee; the bone was untouched and the exit and entrance wounds healed nicely, but about a week later, there was a large swelling, with expansile pulsation, situated posteriorly. A loud bruit could be heard. Dr. Depage had to tie the artery. The other case was in a man who had a compound fracture and ugly wound of the right leg caused by a piece of shell. The left limb was "peppered" with tiny fragments of metal—these latter were left and the skin soon healed over. About three weeks later a swelling of the size of a walnut appeared at the lower part of the popliteal space and this showed pulsation. It was like a pulsating haematoma, and I had considerable difficulty in getting at and ligating some small branches of the popliteal artery and no definite sac was found. The foreign body was not discovered and could not have been larger than the head of a pin.

We have had several, which might almost be justly called, "freak cases". The brass "head" (containing the fuse) of a shell,

about three and a half inches in diameter and of bluntly conical shape, entered the upper part of the posterior aspect of a man's thigh and passed down just beneath the deep fascia and was extracted at a point a short distance above the knee. Little damage was done to the muscles. This "projectile" weighed about five pounds. Another case was that of our second bayonet wound. A German was brought to us after having lain for some hours on the field. A long, thin French bayonet had been thrust through his abdomen from behind and here there was a fair-sized wound, but on the anterior surface there was only a very tiny mark close to the umbilicus where the point had just emerged. He had no abdominal symptoms or signs and after several days rest in bed was sent on to a detention camp. It is hardly conceivable that the intestine was not pierced in at least several places, but evidently during his forced rest in the open a plastic exudate effectually sealed over the perforations. In the *x-ray* plate of a foot we counted twenty-three pieces of shell and many of these were extracted, but ultimately the poor fellow lost his foot. Suppuration is nearly always so great in these wounds to dirty feet. In another case the left thigh and leg were riddled with shrapnel bullets and the left arm had received three perforating wounds. On removing his trousers four bullets dropped on the tiled floor of the operating room. I removed three more which lay just under the skin of the thigh and leg and later, after an *x-ray* picture was taken, again three were removed.

As I once wrote before, tetanus has not been very prevalent with us fortunately and since we have had a good supply of the anti-serum the pathologist has given every case five hundred units on admission. On the other hand, though there was a lull for a time, we have had many cases of "gas gangrene"—but it should rather be termed gaseous infection (*bacillus aerogenes capsulatus*) for gangrene is not always present. One cannot tell in which cases this infection will develop and we have learnt that we cannot be too careful. A routine treatment for all cases was as far as possible carried out on admission. The dry gauze and temporary iodine dressing is removed, the region of the wound is washed with soap and water and the part shaved. Then, after a further cleansing with ether or benzine, iodine is painted on. If it seems necessary and the time of day permits, an *x-ray* is taken immediately (the wound being covered lightly with gauze.) A ring of skin is now cut away from about the wound of entrance (and of exit, if present) and if it does not involve the section of important structures the two wounds are opened into one by cutting the tissues between.

Any fragments of metal or dirty clothing are removed or loose pieces of bone are taken out. The track is mopped out or irrigated with hydrogen peroxide and the wound kept open by packing with cyanide gauze or by the insertion of a fenestrated drainage tube. Wherever the *corps étranger* is accessible, whether shell fragment, shrapnel or rifle bullet, it is removed at once. I might remark here that one cannot always depend on the *x-ray* if the presence of a foreign body is suspected—wood must not be forgotten, for on several occasions we have found small pieces at the bottom of a suppurating wound (notably one case of a foot) from which metal had previously been removed. The *abri* covering the trench is made of wood and on the bursting of a shell, splinters of it may be driven into the flesh. If the dreaded gaseous infection has made itself known, by reason of subcutaneous emphysema, brownish discolouration of the skin, bubbles of gas in the brownish red discharge or by the characteristic odour of this, the wound must be more widely opened and we have also employed circular incisions of the skin and subcutaneous tissues above the areas of discolouration to stop the spread of the infection. The wounds are now irrigated with hydrogen peroxide twice a day and at the same time oxygen is injected with a hollow needle above and below, heed being taken that this procedure drives the infection towards the original wound. Between dressings, gauze, moistened with hydrogen peroxide, is applied. Discolouration of the skin does not make a diagnosis as the reaction of some skins to iodine or to mercuric cyanide may stimulate the true *tache*. And again, as in the case below, this discolouration may be absent or practically so until the late stages of the infection. Often the temperature is not above 100°, but the pulse is always much quickened. We have not tried Wright's treatment of such wounds with hypertonic saline and sodium citrate. For the most part we have been successful in saving the life of the patient and in saving the limb, though, at times, at the expense of, what one might call, cruel deforming operations. From the point of view of prognosis, the cases fall into two broad classes, a less severe where the infection is only in the directly subcutaneous tissues and a second one where the outlook is much more grave, in which the muscles are involved. In the latter instance it is obvious that cross section of the muscles gives more chance of opening up widely, for these tissues contract away from the wound, though they may swell. But after trying to open up by an incision parallel to the muscle-fibres the tissues swell and tend to shut out the air. Professor Wineberg of the Pasteur Institute, Paris,

visited us to introduce his anti-serum—made by inoculating horses with increasing doses of the organism. He hopes soon to supply all the allied armies with a sufficient quantity for a prophylactic dose after every wound. So far we cannot say anything definite as to the success of such treatment with serum. Unhappily in the case now to be cited, no treatment could have had any avail.

L. C., a Belgian soldier, was admitted to the "*ambulance de Dr. Depage*" at ten o'clock on the morning of April 20th. He had been wounded in action near Dixmude twenty-three hours before by a rifle bullet which had entered the outer and upper part of the left thigh and had passed through both thighs grazing the scrotum *en route*. Neither femur was touched. The ordinary field dressing had been applied at once and had been changed at 9 p.m. on the 19th. Antitetanic serum had been given. On admission the patient appeared gravely ill and very toxic. His temperature was 101.4° and pulse 112 and weak. The respirations were increased. He was vomiting thin brownish liquid. The left thigh was not swollen and showed nothing beyond the wounds of entrance and exit. The right, however, showed a few brownish patches just below the inguinal ligament and was enormously swollen and "crackled" beneath the fingers, below as well as above the level of the track of the bullet. This subcutaneous emphysema extended up as far as the right axilla and over the front of the abdomen but there was no discolouration in these regions. On pressing the right thigh very foul smelling brownish discharge came out from both wounds together with bubbles of gas. The thigh was tympanic on percussion. Amputation would have been useless. A few incisions were made just above the patchy skin and gas escaped under considerable pressure. The subcutaneous fat was of a greyish green hue. Anti-serum was given intravenously and injected into these incisions—altogether sixteen cubic centimetres. The thigh was dressed with gauze soaked in the serum. The patient was put to bed and morphia administered. We saw him later at 3 p.m. when he was still vomiting. There was very extensive discolouration by this time over the abdomen, chest and even down the arms as far as the wrists. The pigmentation had also extended down the right leg. The odour in the room we shall never forget. The patient was kept under morphia and died at 7 p.m., just thirty-two hours after a rifle bullet wound in the thigh. It was extremely interesting to us that the left thigh, in which the bullet had first entered, showed no infection. Obviously the organism must have been on the clothes or the skin of the inside of the thighs or scrotum.

I believe the bacillus is often found in the fæces. At post mortem less than two hours after death the organism was recovered from blood taken from all parts of the body. In the right thigh was found a large "*phlegmon gazeux*". There was no peritonitis but marked cedema and active congestion of the mucous membrane of the bowel. Had he come to us sooner, something might have been done. But this was, perhaps, one of the saddest cases we have seen in La Panne and showed in the most striking way that an apparently simple wound may have disastrous consequences. Happily most of our patients are wounded only a very short time or few hours before admission.

In the cases of compound fractures I have not hesitated to use irrigations of one in forty carbolic twice a day and these wounds seem to clean up wonderfully quickly. We should like to have employed more hot fomentations but up till the present the nurses and especially those on at night have had to work so hard.

At St. Idesbald, a tiny watering place about ten minutes walk up the coast, there is a hospital for infectious diseases which break out among the civilians. A fair-sized villa and several temporary wooden lazarettes containing twenty-four beds apiece have been put up and the number will be added to as occasion demands. Professor Nolf of Brussels is in charge and here I have seen some interesting cases. Epidemic cerebro-spinal meningitis seems to be on the increase and the last case, a child of ten months, came from a farm on which 140 soldiers were billeted. Professor Nolf has plenty of the serum. In his opinion there is very likely to be an outbreak of malaria in the inundated areas about Dixmude, for the anopheles are there, and there are always occasional endemic cases in Belgium. It seems that in the time of Louis XIV the country was much flooded and there was a great deal of malaria. Professor Nolf has already had one case, in a woman convalescing from typhoid fever, of chills and rigors which were controlled by doses of quinine. Unfortunately the microscope had not arrived at that time and he was unable to verify his diagnosis. The civilians have been inoculated at the hospital against typhoid by the score, but it is a great pity that Vincent's vaccine cannot be obtained any longer for it was made from cultures of paratyphoid as well as typhoid bacilli, as it has been found that so many of the cases are due to an infection by the former organism. One case of typhoid was of extreme interest as thrombosis of the veins of the lower abdominal wall occurred.

L. C., male, aged thirty-three, entered the hospital on April 25th, after three weeks of illness. His temperature was

104° and the pulse 130 and very easily compressible. He had had marked diarrhoea and incontinence of urine, but there were no "rose spots" on admission. He had been vaccinated elsewhere against typhoid but had received only one dose. The spleen was large and palpable. To Professor Nolf it was obvious that the patient had typhoid fever, though it was not possible, at that time, to have a Widal test of blood culture done. He was put on a strict typhoid diet which seems to have consisted chiefly of sugar and water but was allowed "*lemonade lactique*" ad. lib. On April 29th a small purplish red spot was noted on the umbilicus. This did not fade on pressure and was caused by extravasated blood between the dermis and epidermis. Surrounding this was a greenish halo forming a ring about three inches in diameter. The patient was now delirious. The next day the discolouration appeared in both groins, especially the left, and extended down on to the thighs for a distance of a hand's breadth and also around well into the flanks. Above, it faded out so that the upper border was an almost horizontal line just below the umbilicus. There was no swelling of the legs. Some distension of the abdomen showed itself, due, Professor Nolf thinks, to weakening of the muscular wall and not to portal thrombosis as no intestinal obstruction occurred and there were no signs of ascites. Hot fomentations were applied to the abdominal wall and the patient, now in a very weak and serious condition with marked subsultus tendinum, was given camphor oil in large quantities (eighteen c.c. per diem) together with a milligram of strychnine. Owing to its effect on the bowel the adrenalin, given up to now, was stopped. On May 8th the discolouration began to fade but up till this time the evening temperature registered between 103° and 104° and the pulse ranged between 120 and 140. The temperature curve touched normal for the first time on May 8th. On May 17th, when I last saw him, the signs of thrombosis had practically disappeared, the temperature was normal, the pulse was about 100 and the patient no longer had incontinence of urine or diarrhoea. We consider the patient a lucky fellow and it is to be hoped that the thrombosis will not recur. Evidently the remains of the umbilical vein in the round ligament of the liver and also the superficial external circumflex iliac, the superficial epigastric vein, etc., (which pour their blood into the internal saphenous or femoral vein), were involved. We had a snapshot taken of this striking-looking abdomen, but it gives only a faint idea of the picture.

We have had wounded Belgian soldiers and officers as patients, who have experienced the sensation of a whiff of the poisonous

German gases, but none so far have suffered greatly. A north-east wind is the "ill wind" for the Allies and fortunately of late it has blown in the opposite direction. However, a few hours after the first use of the gas, one of the Belgian generals telephoned to Dr. Depage and the nurses and Belgian women volunteered and sat up till the early hours of the morning making respirators for the Belgian forces.

Few British wounded have come to us as the British sector lies to the south. One of our English chauffeurs was struck in the leg by a small piece of shell whilst driving an ambulance through Furnes and we have had two cases from the British Mission. One of these, Colonel B——, was wounded by several shell fragments whilst on a tour of inspection near Nieuport. He is now convalescing in England. The other was a motor cyclist, who, on the way back from "headquarters," had to turn out into the side of the road to avoid a motor and was thrown violently from his machine. He was travelling at the rate of thirty-five miles an hour but escaped very serious injury. His knee was badly grazed or scraped and some small bits of stone were driven beneath the skin. The capsule of the joint was uninjured though there was considerable effusion. With a posterior splint and a pressure bandage this was soon set to rights. These despatch riders are very brave fellows and theirs is a dangerous life. This man volunteered—he was a small shopkeeper in London—brought his own machine, went through the "Retreat," was wounded once, but remains as cheerful as ever. I trust that these men will receive their due at the close of the war. One afternoon, two sailors, a gunner and an A. B., were brought in from Nieuport. The driver of the ambulance was Dr. Henry Jellett of the Rotunda Hospital, Dublin, he having volunteered as a chauffeur. He delivered the address in Gynaecology at St. John, N.B., last summer and asked me about several of his Montreal friends. The sailors, both Scotsmen, had been wounded about an hour before by a shell which had exploded close to the naval gun. One was wounded in the left lower quadrant of the abdomen. Dr. Depage opened him up immediately, found a perforation, resected a piece of small intestine, which lay close to the iliac colon, cleansed with ether, left in a large drain, and closed with through-and-through sutures. The patient has done very well, and now, three weeks later, the wound, though of course it was infected, has almost entirely healed. Probably the sailor may have to have his abdominal wall re-sutured on account of a hernia. His has been as successful as any of the cases of intestinal wounds. The other

man, we sent on to a British hospital ship and thence to England to an eye specialist, as he had a fragment of shell in the orbit which projected through the floor and into the frontal sinus. His skin presented the best example of the tattooist's art that we had ever seen, and the pictures afforded a constant source of amusement to the Belgian surgeons. It was delightful to hear the Belgians trying to pronounce this sailor's name—Auchterloney. They were loth to believe that it was British. We explained that it was Scotch!

To-day has been a very sad one for Dr. Depage and his two sons as well as for all those who had met Madame Depage. With the first intimation of the sinking of the *Lusitania*, came the news that she had been drowned. Madame Depage was returning after collecting money in the United States for this hospital. Dr. Depage had gone to England to meet his wife, but this morning we all attended the funeral and did not welcome her back alive as we had hoped. It was a full and impressive service in the village church. The Queen was present and a large number of Belgian military officers and government officials were there. The nurses in uniform filled one side of the church and they carried the wreaths of flowers in the funeral procession, through the long winding main street of La Panne, along the *Digue* past the hospital and out to the grave amongst the sand dunes. These Germans really have a big account to pay. "Necessity knows no law" must not and cannot be the criterion of action for the peoples of the future.

T. A. MALLOCH.

Medical Societies

MEDICAL COUNCIL OF CANADA

THE annual session of the Medical Council of Canada was held at Ottawa on June 8th, under the presidency of Dr. Thornton. All the provinces were represented as well as the universities, the Governor-in-Council, and the homeopathic body; in fact only two members were absent from their places, and one of these had left Canada on active service. The various reports, including the President's address, the Registrar's report and the Auditor's financial statement were presented the first day, and will be found in full in the "Third Annual Announcement" issued in July.

The question of granting registration to those who had gone overseas for service was fully considered in consequence of several requests from candidates, and it was decided that affirmative action of the Council would be unwise, in that it might possibly compromise the Council in the eyes of the provincial councils, and that the plain duty of the Council was to grant registration strictly within the regulations laid down which regulations were thoroughly understood by all the provincial councils.

In the afternoon of the first day the Special Committee on Standards of Education presented a comprehensive report through their chairman, Dean Connell, of Queen's University, and the report being adopted, the Committee was continued in its important work as a permanent committee. After the appointment of the Nominating Committee the Council adjourned for the day.

On the second day's session being called to order the Finance Committee presented its report recommending certain accounts for payment. The report was adopted. The report of the Education Committee was then presented and discussed in detail. After full discussion it was decided by the Council to order an examination to be held at Montreal and Halifax coincidently on October 12th, 1915, and also to order a spring examination to be held at Toronto and Winnipeg coincidently on June 13th, 1916. Boards of Examiners were duly appointed for October, 1915, and for June, 1916. The Committee on reciprocity with Great Britain presented its report through Dr. A. W. H. Lindsay, and it was adopted.

The Nominating Committee presented its report at the end of the morning session, as follows: Honorary president, Sir Thomas Roddick; president, Dr. R. J. Gibson; vice-president, Dr. John Stewart; registrar, Dr. R. W. Powell.

Executive Committee—Dr. J. C. Connell, Dr. E. P. Lachapelle, Dr. R. G. Brett, Dr. R. S. Thornton, Dr. E. A. P. Hardy, together with the president, the vice-president and the honorary president, ex-officio.

Education Committee—Dr. R. E. Walker, Dr. E. A. Braithwaite, Dr. W. A. Thomson, Dr. J. S. Gray, Dr. W. Spankie, Dr. L. P. Normand, Dr. W. White, the late Dr. A. Lindsay, Dr. S. R. Jenkins, Dr. J. M. McCallum, Dr. P. C. Dagneau, Dr. F. J. Shepherd, Dr. E. P. Lachapelle, Dr. J. C. Connell, Dr. H. A. McCallum, Dr. J. R. Jones, Dr. D. F. Harris, Dr. C. R. Sugden.

Finance Committee—Dr. F. J. Shepherd, Dr. A. M. Young, Dr. R. E. Walker.

Discipline Committee—Dr. A. MacNeill, Dr. J. Park, Dr. E. M. Morgan, Dr. A. Simard.

Rules and Regulations Committee—Dr. W. Bapty, Dr. R. G. Brett, Dr. D. F. Harris, Dr. J. S. Gray, Dr. H. A. McCallum, Dr. A. Simard, Dr. A. B. Atherton, the late Dr. A. Lindsay, Dr. S. R. Jenkins.

Educational Standards Committee—Dr. J. C. Connell, Dr. F. J. Shepherd, Dr. P. C. Dagneau, Dr. J. S. Gray, the late Dr. A. Lindsay.

On motion, the report was adopted. The honorary solicitor, Mr. F. H. Chrysler, K.C., was duly appointed for the year ending June, 1916, and the auditor, Mr. G. L. Blatch, F.C.A., was also appointed for the current council year.

After certain votes of thanks to the four hospitals in Montreal for the use of their public wards, to the Faculty of Medicine of McGill University for the use of the Medical Building for the examinations of 1914, and to the Grand Trunk Railway for the rooms to hold the annual session of Council, the retiring president addressed the Council in vacating the chair, and the newly elected president thanked the Council for the honour conferred upon him in his election to the chair. The Council then adjourned, with a resolution to meet again on the first Tuesday in June, 1916.

ONTARIO MEDICAL COUNCIL

THE question of importance at the recent meeting of the Ontario Medical Council was the establishment of reciprocal relations between the medical councils of the United Kingdom and the Province of Ontario. The following regulation was passed; a certified copy has been forwarded to the Premier of Ontario, who will submit it to the Federal authorities by whom it will be sent to the Home Government:

Every medical practitioner registered in the medical register of the United Kingdom of Great Britain and Ireland, upon proof to the satisfaction of the Registrar of the College of Physicians and Surgeons of Ontario that he is so registered, and that he is of good character, and that he is by law entitled to practise medicine, surgery and midwifery in the United Kingdom, shall, on application to the said Registrar and on payment of such fee not exceeding one hundred dollars as shall be the fee which by Regulation of the Council

shall be from time to time charged for registration of all persons entitled to be registered in the province of Ontario, be entitled, without examination in the province of Ontario, to be registered under the provisions of the Ontario Medical Act. Provided that he proves to the satisfaction of the Registrar, that the diploma or diplomas in respect of which he was registered in the said Medical Register of the United Kingdom was or were granted to him at a time when he was not domiciled in the province of Ontario, or in the course of a period of not less than five years during the whole of which he resided out of the province of Ontario.

It was moved by Dr. Spankie and seconded by Dr. Crain, that whereas it has become known to the members of this council of the College of Physicians and Surgeons and Ontario, that many of our soldiers in Europe are now suffering in special ways from various forms of nervous and mental trouble due to the terrible shock of war, and whereas these various forms of nervous and mental diseases require special treatment and that efforts are being put forth by those in authority to give this special treatment so far as the circumstances and conditions of war permit, nevertheless these circumstances and conditions are such as to render adequate treatment impossible and in consequence many of our brave young men are not receiving the care and chance for life and health which properly specialized and experienced medical treatment and nursing might give them, therefore be it resolved that this Council respectfully but urgently request the government of this province of Ontario to equip at once an expedition of experienced and specially trained physicians and nurses from its public institutions and others specially qualified for such work and despatch them without delay with proper and full equipment to minister to those afflicted and restore them to convalescence and health or where this is impossible or likely to be unduly prolonged, request the War Office to send them home to Canada when suitable accommodation such as that soon available at Whitby be prepared for their reception and that this special treatment and nursing be there continued so long as may be required under the favourable conditions that such location, surroundings and accommodations afford, and that a copy of this Resolution be sent to the Honourable W. H. Hearst, Premier of Ontario.

The Council also appointed a committee to investigate the question of uniformity in matriculation standards and to report at the next meeting of the Council.

It was recommended that the sum of two thousand dollars be granted for the relief of the Belgian physicians and pharmacists.

The officers elected for the year 1915 to 1916 are: President, H. S. Griffin, M.D., of Hamilton; vice-president, Edmund E. King, M.D., of Toronto; registrar-treasurer, H. Wilberforce Aikins, M.D., of Toronto; prosecutor, John Fyfe, of Toronto.

THE MEDICAL SOCIETY OF NOVA SCOTIA

THE sixty-second annual meeting of the Medical Society of Nova Scotia was held at Amherst on the 7th and 8th of July, 1915. The medical professions of the town and district proved themselves excellent hosts and the meeting which was favoured with splendid weather was thoroughly enjoyed. His Worship, Mayor Douglas, and Mrs. Douglas were At Home on Wednesday afternoon, July 7th, and on the same evening a banquet was given in the Terrace Hotel. On the afternoon of July 8th, members were taken in motor cars to Tignish, where they were hospitably entertained to a lunch of lobsters.

The following matters of business were transacted:

New Glasgow was selected as the place of meeting for 1916 and Dr. C. J. Miller, of New Glasgow, was elected President. It was arranged that Professor Fraser Harris, of Halifax, be deputed to send an account of the Amherst meeting to the JOURNAL of the Canadian Medical Association. It was also agreed that a committee be appointed to act in conjunction with the Editorial committee of the CANADIAN MEDICAL ASSOCIATION JOURNAL to select papers read at the meeting for publication in extenso in the JOURNAL. A communication from the Pharmaceutical Society in regard to the British Pharmacopœia for 1914 was referred to a committee consisting of Doctors Hattie, Maclean, MacKenzie and Walker. They reported that the new conditions should come into effect in September 1st, 1915.

On the motion of Dr. Hattie, a resolution was passed congratulating those medical men who had volunteered for active service, and, on the suggestion of Dr. Walker, this was made to include the medical students and nurses who had gone from Nova Scotia.

Arising out of a motion by Dr. MacIntosh, of Pugwash, seconded by Dr. Patton, of Truro, the following statement was passed: "Since it has been established that alcohol is not a food, in that none of its elements are incorporated into the tissues, and since the heat

its oxidation produces is overcompensated for through the heat lost from the blood-vessels of the skin, and since alcohol is not required to aid any physiological process, and since by its excessive use all systems of the body are injured and the moral nature so altered as to lead to crime, this meeting desires to impress the community with the benefits to be obtained from abstinence from alcohol as a beverage and recommends its use only under advice. This meeting would warn the public that many patent medicines containing large amounts of alcohol are neither foods nor stimulants as advertised."

The following papers were read:

At the morning session on July 7th:

The early diagnosis of pulmonary tuberculosis, by Dr. E. S. Harding, of Montreal;

Artificial pneumo-thorax in the treatment of pulmonary tuberculosis, by Dr. A. F. Miller, Provincial Sanatorium, Kentville;

Eyestrain, by Dr. Elwood T. Easton, of Boston.

At the afternoon meeting:

Military sanitation as applied to farms, by Captain Victor F. Connor, A.M.C.;

Medical sociology, by Dr. S. L. Walker, of Truro.

At the evening meeting:

Non-materialism in medicine, by Professor Fraser Harris, Dalhousie University;

Forty years—plus, by Dr. W. H. Hattie;

Some medical aspects of this war, by Lieutenant-Colonel J. A. Grant, P.A.M.C., A.D.M.S., 6th Division.

Notes on a trip abroad, by Dr. M. Chisholm.

At the morning session on July 8th:

Clinical observations on acute osteomyelitis, by Dr. Macdougall, Halifax.

Sarcoma; differential diagnosis and treatment, by Dr. T. W. Harmer, Boston.

The diagnosis of surgical conditions of the stomach, by Dr. John W. Denis, Boston;

The diagnosis of tuberculosis and other infections of the kidney, by Dr. Benjamin Tenney, Boston;

Five instances of delivery by hysterotomy, by Dr. H. E. Kendall, Halifax.

The paper by Lieutenant-Colonel Grant was an interesting account of the procedures adopted in taking a wounded soldier from the fighting line back to a base hospital and thence to England. In connexion with the subject of recruiting for the Army Medical Corps, a committee consisting of the President and the Secretary of the Provincial Medical Board of Nova Scotia, Dr. W. H. Hattie, Dr. Macdougall and Dr. Corston was appointed to confer with the military authorities.

The papers by Professor Nicholls, Professor Fraser Harris, Dr. Macdougall, Dr. Denis, and Dr. Kendall will appear in full in future issues of the JOURNAL. Abstracts of other papers will be published next month.

NEW BRUNSWICK MEDICAL SOCIETY

THE thirty-fifth annual meeting of the New Brunswick Medical Society was held at Fredericton July 20th and 21st. After the enrolment of members, of whom thirty-five were in attendance, an address of welcome was given by the Mayor of Fredericton. This was followed by the reading of minutes, the reception of delegates and visitors, and the presidential address, delivered by Dr. G. Clowes Van Wart, of Fredericton. The following is a list of the papers and discussions: "Blood pressure," by Dr. F. P. Fleming of St. John; "Toxins" by Dr. J. M. Nugent, of Chipman; "Henoch's purpura," by Dr. G. W. Bailey, of Fredericton Junction; "Infant feeding," discussion introduced by Drs. L. M. Curren and S. Skinner, of St. John; "Case for diagnosis," by Dr. W. J. Weaver, of Fredericton; "Diagnosis and treatment of gall stones," discussion introduced by Drs. W. W. White and A. F. Emery, of St. John; "Cancer of the breast," by Dr. W. E. Gray, of Milltown; "Pellagra, with report of case and photographs," by Dr. L. M. Pinault, of Campbellton; "Thyroid insufficiency," by Dr. F. H. Wetmore, of Hampton; "Medical inspection of schools," by Dr. W. H. Irvine, of Fredericton; "Abdominal bands and adhesions," by Dr. H. H. McNally, of Fredericton; and "Reports of cases," by Dr. D. R. Moore, of Stanley.

The election of officers resulted as follows: president, Dr. W. W. White, of St. John; first vice-president, Dr. S. C. Murray, of Albert, second vice-president, Dr. B. H. Dougan, of Harvey Station;

recording secretary, Dr. D. C. Malcolm, of St. John; corresponding secretary, Dr. J. D. Lawson, of St. Stephen; treasurer, Dr. W. E. Gray, of Milltown; trustees, Dr. D. R. Moore, of Stanley, Dr. J. B. Gilchrist, of Norton, and Dr. L. M. Curren, of St. John. Dr. G. Clowes Van Wart, of Fredericton, and Dr. J. S. Bentley, of St. John, were appointed delegates to the Canadian Medical Association. The next annual meeting of the Society will take place at St. John.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE thirteenth regular meeting of the Society was held Friday April 9th, 1915, Dr. F. W. Hamilton, president, in the chair.

LIVING CASE: Myositis ossificans traumatica, by Dr. Fraser Gurd.

CASE REPORT: A case of meningitis, with pathological specimen, by Dr. C. A. Peters.

The case was that of a young girl, aged fourteen, admitted to the Montreal General Hospital on March 23rd, and died on the following day. The personal history was without interest; always in good health, had two or three of the diseases of childhood. Family history negative; father, mother, two brothers and three sisters alive and well. The history of the present illness was obtained from the father on the girl's admission. The patient was quite well up to ten days ago, except for a small ulcer on her foot, due to rubbing of boot. On March 13th, she developed a cold in the head, no cough, no expectoration, a rhinitis chiefly. Was up and about and did her usual work until March 20th. On this morning she did not want to get up and remained in bed till the late afternoon when she seemed as usual. On the following day she was feverish, could not get up, refused to speak and drank very little. Next morning she seemed to be the same but in the afternoon had a convulsion lasting half an hour. Did not bite her tongue. The right hand was clenched and supinated, the right leg seemed to be paralysed. The following day was admitted to the hospital. On admission, patient unconscious, with a right-sided hemiplegia, temperature $99\frac{4}{5}^{\circ}$, respiration 24, pulse 96. Temperature 104° during the night, incontinence of urine and faeces, twitching of right arm; she lies in bed with her right hand open and the left closed; sensation present. Left pupil dilated and inactive and during examination there was a clonic spasm of the right facial muscle lasting about a minute. Moved her left arm frequently but

continual twitching of the index finger and thumb of the right hand. Respiration negative, circulatory system negative. A white blood count of 45,000.

Nervous system: Right arm and leg flaccidly paralysed, more especially the arm; right side of face partially paralysed; left eye ptosis, pupil dilated, does not react to light; absolutely no rigidity of neck, no Kernig's sign—the two typical symptoms of meningitis absent. A spinal puncture brought away 4 c.c. of a turbid, whitish fluid which was under pressure; no trace of blood, but 275 cells per c.mm. in the count, chiefly polymorphs.

The following day the patient rapidly grew worse; cyanosis, very comatosed; and died twenty-four hours after admission.

The specimen of the brain explains this unusual set of symptoms. The onset suggested a vascular lesion—the abruptness of the onset and the right-sided paralysis. When the skull-cap was removed the anterior half of the left side of the brain was bulging and from a small incision made into the dura mater several ounces of thick, creamy pus dropped to the floor, and curiously enough the meningitis was limited to the anterior half of the brain on the left side. The right side was practically normal. There was also some exudate at the base of the brain. The ears examined before death were negative and post mortem also negative. But on opening into the vault of the skull over the ethmoid the left nares was filled with a pus similar to that found in the brain, so that undoubtedly the meningitis developed as a result of the rhinitis which she contracted a week previously. A report on the growth, as given by Dr. Rhea gave a diagnosis of acute purulent meningitis. From the ethmoid three organisms were isolated in pure culture, the streptococcus, the *Bacillus coli* and the *Bacillus influenzae*. Each organism was identified by passing through various media.

DISCUSSION: J. A. Henderson: I am interested in the anatomical question of how this organism succeeded in getting from the ear sinus to the meninges. I am not quite sure, but I think I gathered that pus was found in the sphenoidal cells, but no mention of pus in the temporal or the ethmoidal sinus. I should be very glad to know if any search was made as to the pathway of communication from the ear sinus to the interior of the cranial cavity.

Dr. A. D. Blackader: I should like to know whether in this very interesting case there was a previous history of acute or chronic inflammation in the nostrils or in their associated sinuses. I would be glad also to learn whether the influenzal bacillus was considered

as the first invading organism or whether the bacillus coli entered through the blood stream.

Dr. C. A. Peters: With regard to the pus, it was in the ethmoid cells and Dr. Rhea was of the opinion that it extended primarily through just in the same way as from a mastoid to the meninges. Whether in this individual the floor or the roof of the ethmoid cells was thinner than normal it is hard to say, but undoubtedly the infection passed through the cribriform plate. With regard to whether she had anything before in her nose or head, her father stated that this girl was often subject to colds in the head. The bacillus coli was probably a terminal infection as that is not uncommon in such cases. The extraordinary thing was the amount of pus present; there was certainly four to six ounces bulging out the meninges in that localized position and it is hard to say why it remained localized over the left motor area, when there were no adhesions to prevent its spreading.

PAPERS: 1. Arteriosclerosis, by Dr. A. H. MacCordick.

DISCUSSION: Dr. W. S. Morrow: I should like to congratulate Dr. MacCordick very heartily on his paper, on the hard work he has done and on the modest way in which he has presented his results and conclusions. What interested me especially perhaps was the way in which he brought out the great diversity that is met with in arterial degeneration. If there are any clinicians here who have failed to recognize this in some cases perhaps as much as they should I hope they will take this to heart. I have really been very much perturbed of late at the number of people going about with a diagnosis of "hardening of the arteries." It seems as if when some physicians come to a diagnosis of hardening of the arteries they feel that they have done a very scientific thing. As we all know, to tell a man past middle age that he has hardening of the arteries is about the same thing as to tell him that he is sick. Practically, a large part of the diseases of the latter half of life are mixed up with this hardening of the arteries. In brain diseases we may have high pressure, with haemorrhage, low pressure with thrombosis, degeneration with general paralysis. Among diseases of the circulatory organs we may mention angina pectoris, hypertrophied and fibrous heart, and various forms of arterial dilatation; in the kidneys we may have interstitial nephritis. Again we may have degeneration of the arteries going on without elevation of blood pressure, especially in syphilitic cases. My point is that we ought to consider that a diagnosis of arteriosclerosis is not the end of the diagnosis, it is the beginning, and I feel very strongly that where the condition

is advanced to a point where we have definite disease taking place in the various organs we should in our minds put these local developments very prominently before us, because whether it be a hypertrophied heart or an interstitial nephritis or disease of the cerebral vessels, or aneurysm, the local condition is very often more in need of and more amenable to treatment than the arteriosclerosis which may have caused it. In the early stages where we have only an arteriosclerosis we may direct our treatment to it alone, but usually we must go farther and recognize the local conditions as far more important from a therapeutic point of view.

Dr. A. D. Blackader: I wish to congratulate Dr. MacCordick on the work he has done on this interesting subject and on the very simple methods he has taken to elicit such valuable results.

2. Practical points in the diagnosis of pulmonary tuberculosis, by Dr. E. S. Harding.

DISCUSSION: Dr. A. D. Blackader. This is a subject which interests every one of us, and we are indebted to Dr. Harding for giving us the result of his experience. Diagnosis in pulmonary tuberculosis is not difficult when we are confronted with the startling symptom of haemoptysis, but as a rule its onset is insidious, and that physician will be most successful in its early detection who makes use of every possible aid in the examination of his patient. A persistent cough in the morning is always suspicious, but nasal and tracheal irritation must be excluded. Pain is a very uncertain and unreliable symptom; more important is the slight afternoon rise in temperature, the slight increase in pulse rate, and the definite loss of weight. The most conclusive signs, excepting always the actual finding of the tubercle bacilli in the sputum are elicited by our examination of the chest. Permit my calling attention to a few points in this examination which in my opinion have not been sufficiently emphasized. In the normal chest the right apex has a lower pitched and more resonant note than the left owing to anatomical differences in the distribution of the bronchial tubes in the two apices, and the breath sounds are slightly more bronchial. Any reversal of this condition—English writers state that even the sameness of the pitch on the two sides is to be regarded with suspicion—should be noted. In our examination we obtain most information by a careful comparison of the two sides, inspiration with inspiration, expiration with expiration. It is never wise to rely on one method of examination—but use all, inspection, palpation, percussion—which is most truthful when done very lightly—and auscultation. Errors are liable to occur in the work of any

physician who places his chief dependence on one method of examination only.

Dr. E. S. Harding: In reviewing the literature one finds that each examiner has a separate sign upon which he lays particular stress, but we also find that although he lays particular emphasis upon this one sign his final conclusion is that by itself it is not sufficient to make a positive diagnosis of pulmonary tuberculosis. Most writers lay stress upon a number of signs taken together. Probably the most stress may be laid upon the findings by auscultation. In discussing early signs many lay stress upon their importance in diagnosis, but do not discuss their significance as regards treatment. That is, whether the presence of such and such a sign is sufficient to place a patient under strict sanatorium or tuberculin treatment. This to me is very unsatisfactory and I should far prefer to know the significance of the one sign or signs as regards putting the patient under active treatment.

THE fourteenth regular meeting of the Society was held Friday, April 23rd, 1915, Dr. W. F. Hamilton, president, in the Chair.

PATHOLOGICAL SPECIMENS: Series by Dr. L. J. Rhea, exhibited by Dr. Fraser Gurd.

1. *Case of multiple metastatic abscesses, pyæmia.* Patient died of œdema of the glottis and at autopsy an ulcer of the œsophagus was found communicating through its base with the larynx and the cords. The tissues between the œsophagus and trachea were infiltrated and suppurative. Opposite there is a secondary implantation ulcer on the posterior wall of the œsophagus.

2. *Organs from a man brought into hospital with acute retention due to stricture of the urethra.* He died of cerebral embolus from cerebral softening. At autopsy he showed a gangrenous suppurative cystitis and apparently as a secondary feature a mural endocarditis with a thrombus in the appendix of the auricle at the left side. Secondary to that he had a cerebral softening from which he died and multiple infarcts in the kidney. In addition to the mural thrombus in the auricle is an old mitral endocarditis with constriction and signs of a moderate grade of apparently syphilitic aortitis. The whole appendage of the heart is filled up with a firm hard clot. The case was one of simple infection of the gall bladder resulting from stricture of the urethra with generalized infection of the mural endocardium of the heart, with emboli in the brain and in the kid-

neys. This occurring in a man who had previously aortitis and mitral endocarditis.

DEMONSTRATION of a new therapy in carcinoma, with living cases, by Dr. J. R. Goodall.

Two years previously Dr. Goodall, in consultation with Dr. Dalpe on a case of advanced carcinoma of the cervix, did a curettage previous to performing a hysterectomy, leaving nothing but a shell of the cervix. It was found that the inguinal glands were badly involved and nothing more was done. The uterus was packed with a 10 per cent. solution of iodine and this was changed every second day until the patient left the hospital; the prognosis was that she could hardly live six months. The patient, however, lived a year and a half after the operation, dying eventually of metastases. During the interval she had no discharge and no more symptoms so far as the pelvis was concerned. Some time later another inoperable case presented itself and it was then Dr. Goodall associated the packing with iodine with the improvement in the first case. This treatment was carried out and improvement was noted almost at once. Altogether eight cases had been treated with remarkable improvement in each.

DISCUSSION: Dr. J. D. Dixon. I would just like to add a few remarks in connexion with this treatment. Through Dr. Goodall's kindness I was able to treat a case at Lachine with iodine; an Indian woman with very advanced inoperable carcinoma of the cervix. The condition was very extensive and proved by microscopical examination; ulceration was so extensive that the finger easily entered up to the fundus of the uterus, the body was extensively involved and both broad ligaments; haemorrhage was severe and practically continuous for nine months; she was confined to bed and suffered a good deal. We had tried scraping and acetone with no effect in controlling the haemorrhage and on February 16th started in with the iodine treatment; at that time she weighed 130 pounds. After a few days treatment, which consisted in curetting the growth and these packings, at first with 25 per cent. solutions and later with 15 per cent., the discharge entirely ceased and the woman began to pick up strength and insisted on getting up. On April 5th she weighed 150 pounds, and has had no haemorrhage, except a little discharge, occasionally blood stained; general health good. The masses in the broad ligaments are greatly reduced and the previously ulcerating surface is much firmer, does not bleed to the touch and is smooth.

Dr. W. W. Chipman: I am very much interested in this subject,

though unfortunately I did not get here in time to hear the first of Dr. Goodall's address. I understand, however, that the treatment he suggests is that of packing the uterus and the cervix with a strong solution of iodine. The results he gives are extremely satisfactory. We who are dealing with cancer of the cervix and of the uterus know what a hopeless condition the subject is in at the present time, even more than it was ten years ago, and anything that will throw light on or increase our knowledge of this condition we will gladly welcome. I understand that the local condition is greatly improved; not only are the symptoms relieved, but the local condition is improved. We all know that these symptoms, the haemorrhage—the local condition—is largely due to an infection; a secondary organismal infection is grafted upon the new growth. The work of Gray in cancer of the tongue is marvellous in its results; anything that will relieve the infection that is grafted upon the cancerous growth will relieve the symptoms. I would ask whether Dr. Goodall thinks the action is upon the cancerous element itself or the infection that is grafted upon the dead or dying tissue. Certainly the cases that come before us to-night look in a comparatively fair state of health and I should be very glad indeed to try this method and judge it, of course, by its results.

I was in St. Louis in February and was very much interested in the work of Percy, who uses the cautery which Dr. Armstrong will show you to-night. This is used at a dull black heat and practically results in slow cooking of the tissue; his method is to introduce it into the cervix and the uterus and slowly cook the whole space. It takes an hour to an hour and a half, and some eight or ten days after the application of the cautery the whole uterine case, or wall, is supposed to, and frequently does, slough away. He claims for it much better results than the extensive operations of Wertheim, and his contention is that while we do not know the cause of cancer, certainly heat applied in that way seems inimical to the growth of these cells. They are practically discarding the more radical operations of Veit and are coming back to the application of heat. Of course you are familiar with the radium treatment of Kelly and the cautery knife of Vert, the vulgury knife which has been a great disappointment in my hands. If this suggestion of Dr. Goodall's holds out I am sure we will all be very glad indeed. In five years to 1911, in twenty cases of cancer of the cervix, three died from the Wertheim operation and only eight of the seventeen left were alive after five years. We certainly do not know the cause

of cancer, and as long as we do not know the cause we must meet the disease in an empirical way, perhaps not knowing the reason why we do this, and if these strong solutions of iodine meet the requirements so much the better for all concerned. I shall be very glad to try Dr. Goodall's treatment in these inoperable cases.

Dr. G. E. Armstrong: I have brought down this cautery to show you. It is constructed to run on a direct current so that I cannot attach it here. It gives great heat and holds it. There are seven or eight attachments of different sizes. The handle does not grow hot but the attachments will keep hot so long as it is in contact with the current. I bought it with the idea of trying it on suitable cases, but so far I have not used it very seriously. In cancer of the cervix it perhaps has a very distinct field, first as a destructive agent to the infection and to the cancer cell afterwards. I have seen it used for the purpose of removing the breast instead of the ordinary scalpel. You go all around the tissues beneath and the contention is that there are fewer vessels to be tied, that you destroy all the cancer cells in the area around and that none of them get into the lymphatics. I am not sure that it is a good thing. I would like to know a little more about it before I use it for cancer of the breast or lip instead of the scalpel. I would not, of course, use it as Dr. Goodall or the gynaecologists would use it, for an hour or an hour and a half; I would use it on an entirely different principle. We theoretically go beyond the area of tissue likely to have cancer cells; the whole thing comes away in one mass. The patients, however, recover much more slowly than with clean-cut operations, where they go home in ten days.

Dr. J. R. Goodall: The treatment that I have outlined is purely empirical. As to the question of its effect upon the cancer cells or merely upon the concomitant infection, I cannot say, but certain inferences may be drawn. We must assume that if the cervix bleeds constantly, giving rise to this discharge, that the carcinomatous cells are on the surface, that the growth is exposed. I have verified this by examination in several cases in which the whole surface was completely cicatrized and there must also have been a destruction of carcinomatous cells as they do not reappear after treatment. What the direct influence of iodine is I cannot say, therefore I have drawn no conclusions but have simply presented facts.

PAPER: Some unusual features of surgery of the biliary system, by Dr. E. M. von Eberts.

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